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Front cover photo by © Larry Sansone of Los Angeles, California: Snowy Owl (*Bubo scandiacus*), Grizzly Bay, Solano County, California, 22 January 2007.

SHOUT
SHARE
IT

Western Specialty:
Red-breasted Sapsucker

Photo by © Tom Grey of Stanford, California:
Red-breasted Sapsucker (*Sphyrapicus ruber*)
Yuba Pass, Sierra County, California, June 2005.

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NORTHWARD RANGE EXPANSION BY THE SHORT-TAILED HAWK, WITH FIRST RECORDS FOR NEW MEXICO AND CHIHUAHUA

SARTOR O. WILLIAMS III, Southwest Natural History Institute, 1819 Meadowview Drive NW, Albuquerque, New Mexico 87104; sunbittern@earthlink.net

JOHN P. DELONG, Eagle Environmental, Inc., 2314 Hollywood Avenue NW, Albuquerque, New Mexico 87104; jpdelong@comcast.net

WILLIAM H. HOWE, Migratory Bird Program, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103; bill_howe@fws.gov

ABSTRACT: We documented single Short-tailed Hawks (*Buteo brachyurus*) in the states of Chihuahua in April 2005 and New Mexico in May and June 2005. These are the first reports for both states. To put these records into historical and geographical context, we compiled published reports for western Mexico and Arizona and for northeastern Mexico and Texas; these indicate a steady northward range expansion by this species over the past half century, an expansion that may have accelerated in recent years.

The Short-tailed Hawk (*Buteo brachyurus*) is a relatively little known hawk best understood from studies of a small and disjunct population in peninsular Florida (e.g., Ogden 1974, 1978) but with an extensive geographic range stretching from Mexico south through Central and South America to northern Argentina (A.O.U. 1998). Throughout that vast range, this specialized hunter of small birds can be found in the tropical, subtropical, or temperate zones but is everywhere considered rare or uncommon or, at least, very thinly distributed. Ogden (1988:46), citing A. R. Phillips, alluded to a possible northward range expansion in both western and eastern Mexico, but more recent summaries (e.g., Johnsgard 1990, Thiollay 1994, Miller and Meyer 2002, 2004) did not comment on that phenomenon other than to note "accidental occurrences" in Arizona and Texas. Here we report on the first records of the Short-tailed Hawk for the state of New Mexico and, apparently, for the Mexican state of Chihuahua, both obtained in 2005. We also compile records from western Mexico and Arizona, northeastern Mexico and Texas, and elsewhere, which, taken together, demonstrate a progressive northward range expansion during the latter half of the 20th century, an expansion that is continuing into the present.

RESULTS

Chihuahua and New Mexico

Chihuahua. From 1 to 4 April 2005, DeLong monitored migrating raptors in the Sierra San Luis at a microwave station in the northern terminus of the range, just north of Mexico Highway 2 and about 0.5 km south of the international border. The site, at about 2095 m elevation, is in shrubland below the pine–oak zone. Raptors migrating north along this northeastern-most spur of the Sierra Madre Occidental pass over the site en route to the Animas Mountains of New Mexico, the next range north. On 3 April, a light-morph adult Short-tailed Hawk soared north past the site and continued to within 350 m of the Chihuahua–New Mexico line before turning back south. The bird was photographed (Figure 1) but was not seen again. Although Howell and Webb (1995:200) mapped the Short-tailed Hawk as occurring in southwestern Chihuahua, no specific records were given, and we are not aware of any published records for the state. Hence our photograph appears to be the first record, verified or otherwise, for Chihuahua.

New Mexico. On 24 May 2005, while surveying for Yellow-eyed Juncos (*Junco phaeonotus*) in the Animas Mountains, Hidalgo County, DeLong and Williams twice saw a light-morph adult Short-tailed Hawk around Cistern Saddle and upper Indian Creek Canyon. Initially, a bird was seen soaring above Cistern Saddle; a short while later one was seen as it sailed north down Indian Creek Canyon. DeLong returned 28 June and again observed

Figure 1. Light-morph adult Short-tailed Hawk, Sierra San Luis, northern Chihuahua, Mexico, 3 April 2005.

Photo by John P. DeLong

a light-morph adult Short-tailed Hawk near Cistern Saddle, photographing it (Figure 2). Cistern Saddle, at about 2410 m elevation in the pine zone, is situated in the highest reaches of the Animas Mountains. There are no previous reports for New Mexico, although the species has been expected there, on the basis of recent occurrences in adjacent Arizona.

Western Mexico and Arizona

Michoacán. Blake and Hanson (1942:526) reported a dark immature Short-tailed Hawk collected in pine–oak forest at 1675 m elevation on the slopes of Cerro de Tancítaro, western Michoacán, in July 1941, apparently the first record of the species in Mexico away from the eastern and southern lowlands. Subsequently, a light-morph adult was seen and a dark-morph juvenile was collected in pine–oak forest at 1980 m southeast of Morelia 14–16 July 1951 (Davis 1953:90); the noted collector Chester C. Lamb had visited that site in August 1939 (Davis 1953) but did not report the species.

Colima. Schaldach (1963:23) reported two specimens taken at or near Pueblo Juárez in central Colima in September and November 1958, commenting that they represented first records for the state and an extension of the known range north from Michoacán. It is noteworthy that the locality had been "one of the most well-known collecting stations in Colima" prior to 1910 (Schaldach 1963:8), yet the species was not recorded in those early years.

Nayarit. The date of initial discovery in Nayarit is not precise, but Alden (1969), who began field work there in 1960, reported the species as com-

Figure 2. Light-morph adult Short-tailed Hawk, Animas Mountains, Hidalgo County, southwestern New Mexico, 28 June 2005.

Photo by John P. DeLong

mon in the vicinity of San Blas as well as occurring inland toward Tepic. Alden (1969:88) commented that those observations represented "a recent discovery"; one on the San Blas Christmas Bird Count in December 1965 is the earliest specific date provided (Alden 1969:121). The avifauna of the environs of San Blas and Tepic had been well studied, beginning with Andrew Jackson Grayson's work in the region in the 1860s (Lawrence 1874), but the species was not reported there until the early 1960s.

Sinaloa. Hubbard and Crossin (1974:7) reported that Crossin, while studying Tufted Jays (*Cyanocorax dickeyi*), observed a pair of Short-tailed Hawks on numerous occasions during 1964 at Rancho Carrizo, located in the pine–oak zone at 1830 m elevation and situated near the Durango line; they noted one bird was light and the other was dark, and that these apparently represented the first records for Sinaloa. Alden (1969) likewise found the species in Sinaloa, at least by the mid-1960s, including inland from Villa Unión, once at Mazatlán, and "occasionally" between Mazatlán and Culiacán.

Sonora. The spread northward into and through Sonora has been documented by Russell and Monson (1998:69), who remarked that the species "appears to have only recently extended its range northward into Sonora." It was first seen at Alamos in southern Sonora in March 1982, next near Tepahui and El Territro in May 1986, subsequently at three additional locales in July 1986, and at yet three more locales during 1987 and 1988, and eventually north to Nacozari by May 1995. Of 13 individuals recorded through 1995, 9 were dark birds; elevations of occurrence were 125–2000 m. The ornithology of Sonora was described in meticulous detail by van Rossem (1945), who found no records for the state.

Arizona. Historically, the Short-tailed Hawk was unknown in Arizona (e.g., Monson and Phillips 1981). The first report for the state was of one seen in the Chiricahua Mountains in August 1985, followed by one in the Huachuca Mountains in July 1988 (Rosenberg and Witzeman 1998). However, over a decade passed before the species was conclusively documented, when one (of two) in the Huachuca Mountains July–September 1999 was photographed (Rosenberg 2001), and one or two were seen in the Chiricahua Mountains in March and August 1999 (N. Am. Birds 53:309, 54:83). The species has been found annually in Arizona since 2001, including with breeding reported in the Chiricahua Mountains that year (N. Am. Birds 56:84) as well as in 2003 (N. Am. Birds 57:528). Of 10 adults identified to color morph in Arizona through 2003, nine were described as light.

Northeastern Mexico and Texas

Tamaulipas. The Short-tailed Hawk has a long history in tropical eastern Mexico; in fact, the type specimen of *B. b. fuliginosus*, the subspecies occurring in North America south to Panama (Rand 1960, Miller and Meyer 2002), was taken in the northeastern state of Tamaulipas (Sclater 1858), although the precise locality is unknown. Early efforts to map this hawk's range (e.g., Brown and Amadon 1968:map 57, Ogden 1988:39) extended it north only to about the vicinity of Tampico in southernmost Tamaulipas. The historic status of the species in the state seems to be unknown; save for

the type plus another specimen from another unspecified locality reported by Rand (1960:451), we found no additional published reports of the species from anywhere in Tamaulipas until the 1970s. In particular, the extensive collecting in northern Tamaulipas in the early 1900s by F. B. Armstrong failed to obtain the species (Phillips 1911), and numerous published reports of expeditions to Tamaulipas from the 1930s through the 1950s (e.g., Sutton and Burleigh 1939, Sutton and Pettingill 1942, Eaton and Edwards 1948, Zimmerman 1957) likewise did not mention it. Similarly, published avifaunal analyses conducted in Tamaulipas during the 1960s and early 1970s (e.g., Webster 1974, Gehlbach 1976) do not mention the species, although many of the sites visited from the 1930s to the early 1970s (e.g., Gómez Farías) are now well known Short-tailed Hawk locales. Christmas Bird Counts were formally extended into Mexico in the winter of 1972–73, and the following winter a Short-tailed Hawk was identified (and recognized as something unusual) by J. C. Arvin at Gómez Farías 1 January 1974 (Am. Birds 28:548). Whatever its earlier status in the state may have been, by the mid-1970s the Short-tailed Hawk was frequently encountered in at least southern Tamaulipas (J. C. Arvin in litt.). By the 1990s, the species was mapped as resident north to central Tamaulipas (Howell and Webb 1995:200) and considered regular at such sites as La Pesca (Howell 1999:86), another locale where it had gone undetected in earlier years (Baker and Fleming 1962).

Nuevo León. The Short-tailed Hawk was first reported from the interior northern state of Nuevo León in 1996, when a light-morph adult was identified near Montemorelos (elevation about 530 m) 29 June 1996 (Behrstock and Eubanks 1997). These authors also reported two additional Nuevo León sightings by A. M. Sada, apparently from about the same time period, and noted that, taken together with recent observations in adjacent Texas, they implied a northward range expansion.

Texas. As in Arizona, the arrival of the Short-tailed Hawk in Texas is clearly a recent event, and this has been summarized by Lockwood and Freeman (2004:46). The first report was from the lower Rio Grande Valley in Starr County in July 1989, and most Texas records since have been from adjacent Hidalgo County. In 1995, however, the species was found north to the Edwards Plateau (Lockwood 2001:58), where there have since been three additional records (Lockwood and Freeman 2004). And, even more recently, one occurred west to the Chisos Mountains in April 2002, a first for trans-Pecos Texas (N. Am. Birds 56:326). Of 17 individuals documented in Texas by 2004, 15 were identified as light-morph birds (Lockwood and Freeman 2004).

DISCUSSION

Available data indicate the Short-tailed Hawk reached western Mexico by the early 1940s and spread steadily northward through northwestern Mexico in subsequent decades, reaching Arizona by 1985 and breeding there by 2001 (Figure 3). A similar expansion apparently occurred in northeastern Mexico, perhaps beginning in the 1970s, with the species subsequently reaching south Texas by 1989, the Edwards Plateau by 1995, the state

Figure 3. Mexico and southwestern United States, with dates of first known occurrences of the Short-tailed Hawk in western and northeastern Mexico and the southwestern United States; first dates are given for three regions in Texas. Reported historic (pre-1940) range in tropical eastern and southern Mexico, based on Brown and Amadon (1968), is indicated by shading.

of Nuevo León by 1996, and trans-Pecos Texas by 2002 (Figure 3). Our records for Chihuahua and New Mexico in 2005 appear to be a predictable continuation of this overall expansion.

We recognize that identification of this pattern rests largely on negative data—the Short-tailed Hawk is a generally scarce species that can be overlooked easily, and so it may have been present but went undetected in our region in previous years. Nevertheless, the avifauna of most of these states was fairly well known prior to first detection, and this argues that the range expansion described here explains a real event. To our knowledge, breeding in these recently occupied areas has been confirmed only in Arizona, but this is a species for which few nests are known anywhere in its range away from the intensively studied Florida population (Ogden 1988, Miller and Meyer 2002).

There is additional evidence of range expansion and/or increased numbers elsewhere in this hawk's range, including in Central America, but detection of changes there is complicated except in places where the avifauna was previously well known. For example, the ornithology of El Salvador was meticulously described by Dickey and van Rossem (1938), who failed to detect the Short-tailed Hawk (an absence still emphasized by A.O.U. in 1998), yet Thurber et al. (1987:167–168) reported five occurrences involving up to

nine adults there beginning in 1971. The situation is similar in Guatemala, where Land (1970:67–68) was aware of only one very old record and never encountered the species himself nor, apparently, did others (e.g., Smithe 1966). Yet the species now is commonly found at sites such as Tikal, where Beavers (1992:63) reported it was first seen in 1971 and has been annual since then, with evidence of local breeding in 1989.

The Short-tailed Hawk's northward expansion, and possible expansion or increases elsewhere, may be related to (1) its ability to tolerate human-altered habitats, and/or (2) the observed northward movement by many species apparently responding to climate change. Some accounts (e.g., Thiollay 1994) mention this hawk's use of edge, cleared, or second-growth habitats, and speculate that such flexibility implies the species likely is secure. In populations studied closely, however, nesting birds clearly prefer the most remote, inaccessible, and undeveloped natural areas available (Meyer 2005). While it is conceivable that the range expansion we discuss was aided in part by habitat alterations that favored the species, we note its frequent occurrence in protected natural areas or remote mountain ranges and caution that tolerance for altered habitats (where birds may be more detectable) should not be confused with preference for such habitats. Alternatively, evidence is accumulating that many bird species, especially "warm-country" species, are advancing northward, and this is often attributed to global climate change (e.g., Inkley et al. 2004). The Short-tailed Hawk's expansion northward, which may have accelerated in recent years, may be another example of that phenomenon.

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SUMMER DISTRIBUTION, ABUNDANCE, AND HABITAT USE OF BLACK-NECKED STILTS AND AMERICAN AVOCETS IN CALIFORNIA'S CENTRAL VALLEY

W. DAVID SHUFORD, PRBO Conservation Science, 3820 Cypress Dr., #11, Petaluma, California 94954; dshuford@prbo.org

JOAN M. HUMPHREY, 733 M St., Davis, California 95616

ROBERT B. HANSEN, Hansen's Biological Consulting, 5448 W. Sunnyview Ave., Visalia, California 93291

GARY W. PAGE, LYNNE E. STENZEL, and CATHERINE M. HICKEY, PRBO Conservation Science, 3820 Cypress Dr., #11, Petaluma, California 94954

ABSTRACT: Little is known about breeding shorebirds in California's Central Valley on which conservation actions could be based. In summer 2003, we surveyed shallow-water habitats throughout that region for Black-necked Stilts (*Himantopus mexicanus*) and American Avocets (*Recurvirostra americana*). Survey methods included ground counts, aerial surveys, and sampling of Sacramento Valley rice fields. We estimated about 30,000 Black-necked Stilts and 10,700 American Avocets in the Central Valley, exclusive of Suisun Marsh. The proportion of stilts and avocets, respectively, within four subregions were Sacramento Valley 74% and 37%, delta 1% and 1%, San Joaquin basin 2% and 7%, and Tulare basin 23% and 56%. The ratio of stilts to avocets was 5.6:1 in the Sacramento Valley, 1.1:1 in the San Joaquin Valley. The Sacramento Valley held 64% of all stilts and avocets, the Tulare basin 32%, the San Joaquin basin 3%, and the delta 1%. Key habitats were rice fields (73%), managed wetlands (10%), and sewage ponds (6%) for stilts, and rice (35%), managed wetlands (32%), agricultural evaporation ponds (14%), sewage ponds (9%), and agricultural canals (6%) for avocets. Rice held 98% of all stilts and 93% of all avocets in the Sacramento Valley. The Tulare basin had five habitats that held >10% of its total for at least one of the species and was the only region where agricultural evaporation ponds, agricultural canals and ditches, and water-storage facilities supported large numbers of shorebirds. Overall, >80% of all stilts and avocets in the Central Valley were found in environments created for agriculture, water management, or industry, where they may be exposed to toxins. Their reliance on these artificial environments is risky, as future changes to serve human economies may reduce the value of such habitats to wildlife. Thus there is a need to restore and enhance high-quality wetlands in the Central Valley to counter historic losses and potential future loss of other shallow-water habitats of uncertain reliability and quality.

California's Central Valley, one of the most productive agricultural areas in the world, has been a particular focus of wetland conservation because over 90% of its historic wetlands have been lost during the past 150 years (Frayer et al. 1989, Kempka et al. 1991). Current efforts to increase wetland habitat in the Central Valley in response to continent-wide declines of waterfowl also aim to benefit other wetland-dependent birds, including shorebirds (USFWS 1990, Streeter et al. 1993), but are hampered by a paucity of biological data on most species. Prior information on shorebird occurrence in the Central Valley consists mainly of surveys of small isolated sites (Jurek 1973, 1974), coarse descriptions of seasonal abundance patterns and habitat selection in the Sacramento Valley (Manolis and Tangren 1975), and studies of single

species (e.g., Pitelka 1950). Knowledge of shorebird use of the Central Valley was greatly expanded by broad-scale surveys in the early 1990s that provided an overview of the abundance, geographic distribution, habitat use, and continent-wide importance of migrating and wintering shorebirds of this region (Shuford et al. 1998).

Concern over continued loss of shorebird habitat (Myers 1983, Senner and Howe 1984) led to the preparation of the U.S. Shorebird Conservation Plan (Brown et al. 2001), which is currently being implemented mainly through regional shorebird conservation plans in partnership with joint ventures of the North American Waterfowl Management Plan (NAWMP Plan Committee 2004). The Southern Pacific Shorebird Conservation Plan (Hickey et al. 2003) encompasses the Central Valley and coastal California. Within this area, the Central Valley Shorebird Working Group strives to set population and habitat objectives, implement conservation recommendations, and define research and monitoring priorities for shorebirds. Among the highest research priorities the group identified was the need for surveys of breeding shorebirds in the Central Valley. Little is known about their status in the region in summer, a period when wetland habitat reaches its annual nadir and for which wetland loss has been even greater than at other seasons.

To fill this important data gap, we coordinated counts of potentially breeding shorebirds at wetlands and other shallow-water habitats throughout the Central Valley from mid-May to mid-June 2003. Here we report the patterns of geographic distribution, abundance, and broad-scale habitat use of the Black-necked Stilt (*Himantopus mexicanus*) and American Avocet (*Recurvirostra americana*), the shorebird species most representative of these habitats in the Central Valley. We also identify threats to nesting shorebirds and make recommendations for management and research needed to ensure the effective conservation of their populations and habitat in this region.

Study Area

California's Central Valley, averaging about 644 km long and 64 km wide, runs north to south through the heart of the state, where it is surrounded by mountains except at its western drainage into the San Francisco Bay estuary. It is divided into the Sacramento Valley, draining south, the San Joaquin Valley, draining north, the Sacramento–San Joaquin River delta (hereafter delta), where these rivers converge, and Suisun Marsh, where land-locked wetlands merge with tidal habitats of the San Francisco Bay estuary. We did not survey shorebirds in Suisun Marsh hence do not discuss it further. We report data for four major subregions of the Central Valley: Sacramento Valley, delta, and the San Joaquin and Tulare basins of the San Joaquin Valley (see map in Shuford et al. 1998).

Precipitation in the Central Valley was close to normal in the winter prior to our surveys but well above average in the spring of 2003. Precipitation for the climate year (1 July–30 June) 2002–2003, averaged over many stations, was 100.3 and 46.2 cm in the Sacramento and San Joaquin drainages, respectively, representing 105% and 90% of their long-term averages (n = 108 yrs) (Western Regional Climate Center; http://www.wrcc.dri.edu/divisional.html). Precipitation for late spring (1 April–31 May) 2003 for these regions

was 21.8 and 12.9 cm, respectively, representing 195% and 193% of the long-term averages. The atypical rainfall in the spring delayed planting of rice in the Sacramento Valley, as described below, but otherwise appeared to have limited effects on shorebirds and their habitats. Spring rains may have slightly delayed the drying out of some shallow-water habitats, but the normal winter precipitation overall did not create extensive ephemeral breeding habitat, as occurs in years of exceptional rainfall (e.g., 1997–98; Shuford et al. 2001).

METHODS

Survey Design

We attempted to count breeding and potentially breeding shorebirds at all shallow-water habitats throughout the Central Valley from mid-May to mid-June 2003. Habitats surveyed included agricultural canals and ditches, agricultural evaporation ponds, dairy lagoons and other farm ponds, fish ponds, irrigated fields and pastures, managed wetlands (in state wildlife areas, federal refuges, duck clubs, or other reserves), oxbow lakes, park or other urban ponds, ponds at food-processing plants, rice fields, reservoirs, sewage ponds, slough channels, storm-water retention ponds, water-recharge ponds, vernal pools and other ephemeral wetlands, and miscellaneous water bodies. We identified potential sites to survey for breeding shorebirds on the basis of extensive prior experience counting migratory and wintering shorebirds in the Central Valley (see Shuford et al. 1998), from discussions with knowledgeable local experts, and from additional field reconnaissance.

To minimize over- or undercounts of shorebirds arising from their local or regional movements, we surveyed them in a short period near the beginning of the breeding season but after the end of spring migration. Because of the study area's great size and the limited number of available observers, we staggered the timing of surveys from south to north. Our primary survey periods were 15–29 May for the Tulare basin, 22 May–5 June for the San Joaquin basin and delta, and 1–15 June for the Sacramento Valley. Although the vast majority of sites were surveyed within these periods, when this was not feasible observers censused some sites slightly later in the season.

Our primary focus was to estimate the size of the breeding populations of Black-necked Stilts and American Avocets in Central Valley wetlands. We recognized that some birds counted and included in our valleywide totals were likely nonbreeders, given not all individuals of both species breed in their first year, and some nonbreeding avocets summer in known nesting areas (Robinson et al. 1997, 1999). Although we instructed observers to count all potentially breeding shorebirds present at each site, it was not possible to obtain valleywide population estimates for other species. Surveying the Killdeer (*Charadrius vociferus*) was beyond our capabilities because it uses such a wide variety of wetland, agricultural, and upland sites, and other species—the Snowy Plover (*Charadrius alexandrinus*), Spotted Sandpiper (*Actitis macularia*), and Wilson's Snipe (*Gallinago delicata*)—either breed so locally in the Central Valley, use mainly habitats other than wetlands, or are so cryptic that they require specialized surveys (see discussion in Shuford et al. 2004a).

Because of the huge size of the study area and logistical constraints varying by habitat and subregion, we used a combination of survey methods, as described below.

Ground Counts

PRBO staff and numerous professional and amateur field ornithologists conducted ground counts at the vast majority of sites surveyed. Because of the difficulty of defining what constitutes an individual "site" within complexes of shallow-water habitats, we did not tally the total number of sites surveyed. Still, they numbered in the hundreds, and a complete list of them is available by request from the authors. We provided all observers with a protocol for counting breeding shorebirds, nests, and broods, for estimating the size of the survey site, and for describing habitat. Although we requested that observers record all nests or broods seen, we did not ask them to determine whether or not all adult shorebirds present were breeding or not, as this generally is not possible during a brief one-time survey. Observers conducted ground counts at those discrete sites to which we had obtained access, either by walking or by driving levees or roads and by scanning all suitable foraging and nesting habitat for shorebirds using binoculars and spotting scopes. They confirmed nesting by observing nests with eggs or recently hatched chicks, adults sitting in incubation posture on apparent nests, or broods of mobile young smaller in size than adults.

Aerial Surveys

PRBO staff flew portions of the Central Valley by fixed-winged aircraft (Cessna 185 Skywagon) to survey areas not feasibly covered from the ground: five hours for part of the delta on 21 May, six hours for other portions of the delta and part of the San Joaquin basin on 22 May, four hours for part of the Sacramento Valley on 6 June, and six hours for part of the Yolo, San Joaquin, and Tulare basins on 12 June. Details of the areas covered are described in Shuford et al. (2004a). We flew at altitudes averaging 300 m to look for potential habitat, and when it was located we descended to about 45 m and reduced air speed to about 90 knots to count shorebirds. Two observers counted shorebirds, each looking out opposite sides of the plane. Within all areas surveyed, we did not cover sites that we knew would be surveyed by other observers on the ground on other dates.

Sampling of Rice Fields

We counted shorebirds from the ground in a random sample of rice fields broadly distributed across the Sacramento Valley to allow estimation of overall shorebird numbers in the extensive area of rice cultivation in that region. As with ground counts in other habitats, we used binoculars or spotting scopes to scan each field carefully for foraging adults, incubating adults, and broods. To enable us to estimate densities of shorebirds in each sampled field, we obtained data on their size either by (1) collecting Global Positioning System (GPS) points at the corners of fields, defining a polygon, and calculating its size with geographic-information system (GIS) software, (2) estimating the length and width of fields using a laser GPS unit, which

allowed easy calculation of the field's area, (3) obtaining acreages directly from ranchers' maps, or (4), in a small number of cases, driving perimeter roads to calculate the length and width of a field using a car odometer. By contrast, in the limited areas of rice in the delta and San Joaquin basin we tried to count all shorebirds directly.

In 2003, farmers planted an estimated 208,205 ha of various types of rice in the Central Valley. Of the 200,921 ha planted in the Sacramento Valley, 198,705 ha were the commonly grown rice *Oryza sativa* (USDA, National Agricultural Statistics Service, Calif. Statistical Office, Sacramento; http://www.nass.usda.gov/ca/coest/indexce.htm) and 2216 ha were wild rice (*Zizania palustris* var. *interior*; Calif. Wild Rice Advisory Board, Sacramento). For analyses, we used the total amount of all types of rice because we were not able to distinguish between them in the field early in the rice-growing season.

In 2003, heavy showers in April and early May delayed the planting of rice, and some intended acreage was not planted (NASS 2003). In the Sacramento Valley, on average, planting was delayed roughly three weeks (5–6 weeks in some areas) later than in a normal year (peak planting usually 1–10 May); planting on the west side of the valley was advanced about two weeks over that on the east side (P. Buttner pers. comm.). Overall an estimated 80% of all rice in California had been planted by 1 June, 90% by 8 June, and 100% by 15 June (USDC and USDA 2003, P. Buttner pers. comm.). Reflecting the earlier initiation there, it appears that 100% of the rice on the west side of the valley had been planted by 8 June (P. Buttner pers. comm.). Fields are typically planted at most two or three days after they are flooded, so planting dates are a conservative gauge of the fields' suitability for shorebirds, which may use them as soon as water is available.

We estimated the total number of stilts and avocets in rice fields of the Sacramento Valley by county by multiplying the number of hectares planted in all types of rice times the mean density estimate for that county (birds/ha). We estimated densities for a sample of 497 rice fields, spread among eight counties, by using the bird counts and measurements of field size for each field sampled. Despite the late start to the rice season and the west-to-east differences in planting, we apparently sampled most fields at or close to the time when all rice had been planted; sampling began on the west side on 5 June, on the east side on 10 June, and was completed by 19 June.

RESULTS

Abundance and Distribution

We estimated that 30,006 adult Black-necked Stilts and 10,748 adult American Avocets were in the Central Valley, exclusive of Suisun Marsh, at the time of our survey (Tables 1–3). Of these species, respectively, 22,231 (74%) and 3946 (37%) were in the Sacramento Valley, 160 (1%) and 87 (1%) were in the delta, 695 (2%) and 732 (7%) were in the San Joaquin basin, and 6920 (23%) and 5983 (56%) were in the Tulare basin. The ratio of stilts to avocets was 5.6:1 in the Sacramento Valley, 1.1:1 in the San Joaquin Valley. The Sacramento Valley held 64% of the valleywide total of

Table 1 Estimated Numbers of Black-necked Stilts and American Avocets Breeding in Sacramento Valley Rice Fields, 5–19 June 2003[a]

			Black-necked Stilt		American Avocet	
County	Hectares planted rice[b]	Fields sampled (*n*)	No. per 100 ha (±SE[c])	Estimated numbers (±SE)	No. per 100 ha (±SE)	Estimated numbers (±SE)
Butte	35,532	52	10.9 ± 4.2	3873 ± 1508	0.0 ± 0.0	0.0 ± 0.0
Colusa	55,848	76	7.1 ± 2.2	3987 ± 1165	1.5 ± 0.7	843 ± 400
Glenn	33,387	76	5.3 ± 2.3	1776 ± 767	0.3 ± 0.3	90 ± 94
Placer	3804	38	13.0 ± 5.7	494 ± 252	0.6 ± 0.4	22 ± 16
Sacramento	3278	52	55.2 ± 27.1	1809 ± 875	8.3 ± 3.4	271 ± 112
Sutter	39,215	86	15.5 ± 6.9	6074 ± 2668	2.7 ± 2.3	1075 ± 919
Yolo	13,072	79	28.1 ± 6.5	3672 ± 736	10.1 ± 3.4	1319 ± 446
Yuba	14,326	38	0.9 ± 0.5	129 ± 72	0.4 ± 0.4	52 ± 52
Totals	198,462	497	—	21,816 ± 1392	—	3671 ± 453

[a]Estimates based on a simple random sampling of individual rice fields (see Methods); sampled fields collectively held a total of 439 stilts and 59 avocets.

[b]Hectares of planted rice by county encompasses all types of rice, including sweet and wild rice. The value for Tehama County, which we did not sample for stilts and avocets, was 243 hectares.

[c]SE, standard error.

stilts and avocets combined, the Tulare basin 32%, the San Joaquin basin 3%, and the delta 1%.

Overall, we tallied 937 and 1071 nests and 499 and 700 broods of stilts and avocets, respectively. Of the totals, 85% and 87% of the combined nests and broods of the respective species were recorded in the Tulare basin.

Habitat Use

The habitats with the most stilts and avocets varied by species and region of the Central Valley. In decreasing order of use, rice, managed wetlands,

Table 2 Numbers (Percentage) of Breeding Black-necked Stilts by Habitat Type and Region of the Central Valley in 2003

	Sacramento Valley	Delta	San Joaquin basin	Tulare basin	Central Valley total
Managed wetlands	219 (1.0)	4 (2.5)	307 (44.2)	2441 (35.3)	2971 (9.9)
Sewage ponds	133 (0.6)	33 (20.6)	274 (39.4)	1329 (19.2)	1769 (5.9)
Rice fields	21,816 (98.1)	72 (45.0)	26 (3.7)	0 (0.0)	21,914 (73.0)
Water-storage facilities	42 (0.2)	0 (0.0)	2 (0.3)	820 (11.8)	864 (2.9)
Miscellaneous	21 (0.1)	51 (31.9)	86 (12.4)	202 (2.9)	360 (1.2)
Evaporation ponds	0 (0.0)	0 (0.0)	0 (0.0)	1170 (16.9)	1170 (3.9)
Agricultural canals	0 (0.0)	0 (0.0)	0 (0.0)	958 (13.8)	958 (3.2)
Totals all habitats	22,231	160	695	6920	30,006

Table 3 Numbers (Percentage) of Breeding American Avocets by Habitat Type and Region of the Central Valley in 2003

	Sacramento Valley	Delta	San Joaquin basin	Tulare basin	Central Valley total
Managed wetlands	137 (3.5)	3 (3.4)	395 (54.0)	2890 (48.3)	3425 (31.9)
Sewage ponds	121 (3.1)	12 (13.8)	217 (29.6)	614 (10.3)	964 (9.0)
Rice fields	3671 (93.0)	27 (31.0)	15 (2.0)	0 (0.0)	3713 (34.5)
Water-storage facilities	11 (0.3)	0 (0.0)	1 (0.1)	192 (3.2)	204 (1.9)
Miscellaneous	6 (0.2)	45 (51.7)	104 (14.2)	55 (0.9)	210 (2.0)
Evaporation ponds	0 (0.0)	0 (0.0)	0 (0.0)	1538 (25.7)	1538 (14.3)
Agricultural canals	0 (0.0)	0 (0.0)	0 (0.0)	694 (11.6)	694 (6.5)
Totals all habitats	3946	87	732	5983	10,748

and sewage ponds combined held 89% of all Black-necked Stilts, whereas rice, managed wetlands, agricultural evaporation ponds, and sewage ponds held 90% of all American Avocets (Tables 1–3). As discussed further below, the percentage of these shorebirds in managed wetlands is weighted heavily by the numbers, particularly of avocets, at a single atypical site in the Tulare basin.

In the Sacramento Valley, we estimated 21,816 (standard error 1392, 95% confidence interval 19,087–24,545) adult stilts and 3671 (standard error 453, 95% confidence interval 2784–4559) adult avocets in rice fields (Table 1). Densities of stilts and avocets in rice fields in the Sacramento Valley varied considerably from county to county. Rice fields accounted for 98% of all stilts and 93% of all avocets in this region. The only other habitats that held ≥3% of either species' regional total were managed wetlands and sewage ponds for avocets (Tables 2 and 3). The habitats most frequently used by the few stilts and avocets in the delta were rice fields, miscellaneous (mostly agricultural) habitats, and sewage ponds. Key habitats for both species in the San Joaquin basin were managed wetlands, sewage ponds, and miscellaneous (mostly agricultural) habitats. In the Central Valley overall, we found >89% of all stilts, >66% of all avocets, and >83% of both species combined in habitats created for agricultural, municipal, or industrial needs.

Stilts and avocets were more evenly distributed among a greater number of habitats in the Tulare basin than in other regions of the Central Valley. Five habitats in the Tulare basin held >10% of the basinwide total for at least one of the two species (Tables 2 and 3). The Tulare basin was also the only region where agricultural evaporation ponds, agricultural canals and ditches, and water-storage facilities (water-recharge ponds, stormwater-storage ponds, and reservoirs) supported large numbers of stilts and avocets. The percent of stilts (35%) and avocets (48%) in managed wetlands in the Tulare basin is heavily weighted by the very high proportion of these found in wetland mitigation or compensation habitats created to offset the potential harm to shorebirds and other wildlife from selenium concentrated in agricultural evaporation ponds. One of these compensation wetlands, supplied by saline water from an adjacent evaporation basin, alone held 831 stilts and 2054

avocets, representing 22% of all recurvirostrids in the Tulare basin and 7% of those in the entire Central Valley. Exclusive of these mitigation or compensation wetlands, other managed wetlands accounted for 23% and 14% of the Tulare basin totals for stilts and avocets, respectively.

DISCUSSION

Coverage

We did not survey every potential site for breeding shorebirds in the Central Valley but judge that we did not miss substantial numbers of stilts and avocets. We surveyed almost all managed wetlands that had water in early summer, either from the ground or by aerial surveys. In the Tulare basin, we did not survey every agricultural canal and ditch, particularly on the west side of the basin, or many dairy wastewater lagoons throughout. Although we surveyed the vast majority of the large sets of sewage ponds throughout the Central Valley, we did not survey some small sets, the ones, though, least likely to hold many shorebirds. Our sampling of rice fields throughout the Sacramento Valley was sufficient to estimate shorebird numbers there. However, we probably undercounted numbers in the much smaller areas of rice in the delta and San Joaquin basin, where, rather than sampling, we tried to make comprehensive counts from perimeter, and some internal, roads. Our coverage of vernal pools, particularly on the east side of the delta and San Joaquin Valley, was from aerial surveys, which likely underestimated the birds' numbers. Aerial surveys provided minimum counts, as at that season breeding shorebirds can be widely scattered, and some, particularly those sitting on nests, may not flush, making them hard to pick out against the background. Fortunately, because of the limited extent of shallow water remaining in late spring and summer we relied on aerial surveys to a degree much less than have prior valleywide surveys of migrant and wintering shorebirds (see Shuford et al. 1998). Despite their limitations, aerial surveys of breeding shorebirds did provide valuable information on the distribution and relative proportions of stilts and avocets.

Irrespective of limitations that may have reduced overall counts of stilts and avocets, the timing of counts may have under- or overestimated the value of certain habitats to breeding shorebirds. We might have found more breeding shorebirds in vernal pools before they dried out or in managed wetlands being drawn down if we had surveyed these habitats earlier in the season. For example, vernal pools at Sacramento National Wildlife Refuge where shorebirds were breeding in mid-May had dried out by the time of our surveys of the Sacramento Valley in early June (M. Wolder, J. Silveira pers. comm.). Conversely, we may have somewhat overestimated the value of artificial habitats created for agricultural, municipal, or industrial needs. Most of these habitats typically are supplied with water throughout the summer and hence may absorb some birds moving from habitats that dry out earlier in the season.

Despite these limitations, we judge our data adequately described the general patterns of abundance, distribution, and habitat use of stilts and avocets in the Central Valley in 2003. These patterns are likely fairly typical

of normal years but may differ markedly from those in years following very wet winters, when extensive flooded habitat can remain into the breeding season, particularly in the closed Tulare basin.

That we found 86% of total stilt and avocet nests and broods in the Tulare basin was largely an artifact of our contrasting survey methods in the two subregions of the Central Valley with large numbers of both species. Over 99% of shorebirds in the Tulare basin were counted by direct ground surveys of individual sites, whereas about 95% in the Sacramento Valley were estimated from samples of a relatively small proportion of the total extent of rice fields.

Comparative Abundance

Our estimates of about 30,000 Black-necked Stilts and 10,700 American Avocets in the Central Valley are far higher than the few breeding-season estimates of these species for other large sites or broad areas of California. Assuming that all the birds we counted were breeding and the sex ratio is 1:1 (Robinson et al. 1997, 1999), there were about 15,000 pairs of stilts and 5350 pairs of avocets in the Central Valley in 2003. Applying these same assumptions to count data, Rintoul et al. (2003) estimated 590 pairs of stilts and 1380 pairs of avocets in south San Francisco Bay in 2001. Prior estimates for south San Francisco Bay, differing in area coverage and employing extrapolations for unsurveyed areas, are 400–650 pairs of stilts and 650–1800 pairs of avocets (Gill 1972, Rigney and Rigney 1981). Rintoul et al. (2003) knew of no other sites on the U.S. Pacific coast with breeding numbers approaching those in south San Francisco Bay. The salt works at south San Diego Bay together with smaller sites on the coastal slope of San Diego County, however, may collectively hold numbers of stilts comparable to those in south San Francisco Bay, as Unitt (2004) reported about 1000 stilts winter in San Diego County and they are "about as abundant in summer as at other seasons."

Large numbers of stilts and avocets also breed at sites east of the Cascade–Sierra axis. Counts in June 2003 yielded about 1650 pairs of stilts and 1000 pairs of avocets in the Klamath basin on the Oregon–California border (Shuford et al. 2004b); respectively, about 86% and 90% were in California and 78% and 74% were at Lower Klamath National Wildlife Refuge (PRBO unpubl. data). There are few estimates for the Great Basin within California. Oring et al. (2000) reported that roughly 500 pairs of avocets nest at Honey Lake in Lassen County. Numbers of avocets at Owens Lake, Inyo County, have increased to 1763–2893 individuals (about 882–1446 pairs) in 2003–2005 since extensive areas of the lakebed were shallowly flooded to control dust (PRBO unpubl. data). Large numbers of stilts nest at the Salton Sea in the Colorado Desert, but breeding-season surveys of the entire sea are lacking. Periodic counts at reference sites at the Salton Sea throughout 1999 showed relatively stable numbers of stilts from March through May, with a steep increase from mid-June through mid-August (Shuford et al. 2000). These data suggest that numerous seawide shorebird counts made from mid- to late April, the peak of migration for many other species, may provide reasonable approximations of the breeding population of stilts at the

sea. The median number of stilts on seven April counts at the Salton Sea from 1989 to 1995 was 3149 (range 1171–10,467; Shuford et al. 2002a), and 3465 were counted in April 1999 (Shuford et al. 2002b). Although these counts suggest that about 1500–1700 pairs of stilts nest at the Salton Sea in most years, it would be valuable to confirm with seawide counts in May whether the broad range in numbers in prior April counts reflects mostly year-to-year variability in breeding stilts or perhaps pulses of migrants not detected in the periodic counts at reference sites in 1999.

Historical versus Current Conditions

Before European settlement, California's Central Valley contained extensive shallow-water wetlands, which varied dramatically both seasonally and annually depending on the amount of flooding from winter rains or spring runoff from snowmelt. These ephemeral wetlands were highly productive, and when they persisted into spring and summer provided important habitat for many species of breeding waterbirds, including shorebirds (see Shuford et al. 2001 for the Black Tern, *Chlidonias niger*). By the mid 20th century, aggregate numbers of stilts and avocets in California had already been reduced commensurate with the reduction in the extent of interior marshlands (Grinnell and Miller 1944). Loss of natural breeding habitat in the Central Valley was offset to an unknown degree by the creation there of various artificial habitats to meet human needs and by the development of salt ponds in the San Francisco Bay estuary, where nesting populations of both species increased earlier in the 20th century (Gill 1977).

Today almost all streams flowing into the Central Valley are dammed and, hence, the valley floor is flooded in extremely wet years only. For example, floods in the Sacramento Valley that occurred historically about every 2 years now occur once every 7 to 13 years, and 10-year floods, by historic standards, now occur about once every 100 years (Bay Institute 1998). Also, now floodwater usually does not persist long before it is drained off, except sometimes in the closed Tulare basin. Large numbers of shorebirds still respond rapidly to flood conditions: on 23 June 1998, following an El Niño winter, a single set of flooded fields (size 1.6 × 0.8 km) south of Alpaugh, Tulare County, held about 1010 Black-necked Stilts (Shuford pers. obs.).

Today a high proportion of the habitat in the Central Valley available for breeding shorebirds occurs where water is used for agricultural, municipal, or industrial needs. Although such sites sometimes support high densities of breeding shorebirds, there is almost no information on whether these birds produce young sufficient to maintain stable populations or if their exposure to harmful substances might reduce breeding success. Regardless, reliance on these environments is generally risky, as future changes in management practices may reduce benefits to wildlife.

Breeding Habitat

The concentration of >80% of all stilts and avocets in the Central Valley in artificial environments appears to be atypical at this scale elsewhere in the range of these species. Robinson et al. (1997, 1999) described stilts and avocets as breeding in many human-altered habitats, such as salt, evapora-

tion, and sewage ponds. Still, natural or managed wetlands seem to be the most important breeding habitats for these species over large portions of their ranges (e.g., Oring et al. 2000) with large concentrations at shallow-water environments created for commercial or municipal purposes being infrequent (e.g., Rintoul et al. 2003 for salt ponds).

Threats to Breeding Shorebirds

Known or potential threats to shorebirds in the Central Valley are poor or toxic water quality; habitat loss or degradation to urbanization; changing or detrimental agricultural, municipal, or industrial practices in artificial habitats; and increasing competition for water among municipal, agricultural, and wildlife interests.

In the late 1970s and early 1980s, high levels of salts and trace elements in agricultural drainwater in the San Joaquin Valley, sent to wetlands to provide wildlife habitat or to agricultural evaporation ponds for disposal, resulted in bioaccumulation of selenium sufficient to harm reproduction of shorebirds, including stilts and avocets (Ohlendorf 2002). Exposure to selenium has since been reduced by closing wetlands with extreme concentrations or by providing uncontaminated water. Despite steady declines in selenium levels, concentrations in some species still exceed those known to impair reproduction. It is unknown if there are sublethal effects of selenium on chicks at this, the most vulnerable, stage of the species' life cycle.

Evaporation-pond operators have been required to reduce the risk of wildlife contamination by closing some ponds, making remaining ponds less attractive to birds, and creating nearby uncontaminated wetlands as alternative habitat (Moore et al. 1990, Steele and Bradford 1991, Bradford 1992). Modifications to discourage bird use—removal of islands, increasing the steepness of levee slopes, maintenance of relatively high (0.6 m) water levels, and hazing—that greatly reduced the number of stilts and avocets nesting at large complexes of ponds in the Tulare basin have been offset by the creation of highly managed compensation wetlands (equipped, for example, with an electric predator-exclusion fence 1.3 m high) that support high numbers and densities of nesting avocets and stilts (Davis et al. 2005). Despite these improvements, some of the large numbers of stilts and avocets we found breeding along agricultural canals may remain at risk when foraging at canals carrying drainwater with high concentrations of selenium.

The effects of contaminants on shorebirds using sewage ponds and agricultural fields are poorly known. Use of pesticides in rice fields has caused occasional mortality in waterfowl, raptors, and, rarely, shorebirds, but no chronic problem has been documented (Littrell 1988). It is unclear, though, what effect pesticides may have on the invertebrates on which stilts and avocets feed in rice fields. Loss of invertebrate diversity or biomass could lead to chick starvation. However, studies showing that some female Mallards (*Anas platyrhynchos*) renest after losing first broods and that ducklings' survival rate is 60% suggest that the quantity of invertebrates in rice fields is adequate (G. Yarris pers. comm.).

Urban growth directly threatens wetlands, most notably at the Grasslands wetlands complex near Los Banos (T. Poole pers. comm.). Urbanization con-

tinues to reduce agricultural lands in the Central Valley at a rate among the highest in North America (American Farmland Trust 1995, Sorensen et al. 1997). Although rice acreage has been increasing in the Sacramento Valley overall in the last decade (http://www.nass.usda.gov/Statistics_by_State/California/index.asp), urban expansion is reducing the acreage of this crop between Sacramento and the Marysville–Yuba City area. This reduction could affect the stilt and avocet adversely, as their densities generally were highest in rice fields in the counties—Sacramento, Yolo, Sutter, and Placer—with or adjacent to rapid urban expansion. This pattern does not apply to all birds using rice fields, though; prior surveys of Black Terns in Sacramento Valley rice fields generally found the highest densities in the counties farthest from human population centers (Shuford et al. 2001). Elsewhere, restoration of habitat previously lost to urbanization or industrialization will benefit certain species but may reverse prior gains for breeding shorebirds. In south San Francisco Bay, which holds large numbers of breeding stilts and avocets, plans to convert salt ponds to tidal marshes are likely to have negative effects, particularly on avocets (Rintoul et al. 2003). Because salt ponds have inadvertently compensated for some historic habitat loss in the Central Valley, it would be valuable to counter any future losses of coastal salt ponds, if infeasible locally, by enhancing Central Valley breeding habitats.

A $19 billion agriculture industry (CASS 2004) dominates land use in the Central Valley, and its future could influence shorebird habitat tremendously, either positively or negatively, via shifting cropping patterns or farming practices in response to economic forces and technological advances. In the meantime, some current agricultural practices may pose challenges for shorebirds. Rapid short-term drawdowns of water in rice fields, practiced early in the season by some growers, may result in increased predation rates on shorebird nests, reduced foraging opportunities, or the destruction of nests when fields are reflooded (see Lee 1984 for effects on Black Terns).

Secure nesting sites generally appear to be more limited in agricultural settings than in managed wetlands with suitable islands. At agricultural evaporation ponds managed to eliminate vegetative cover and potential nesting islands, stilts and avocets nesting mainly on barren linear levees experience average losses of about 90–95% of all nests to predation (primarily by coyotes, *Canis latrans*) (Hansen and J. Seay/H. T. Harvey unpubl. data). Conversely, nest success at an alternative wetland with an electric predator-exclusion fence averaged 82% for avocets and 75% for stilts over 10 years (Davis et al. 2005). Also, islands or other secure nest sites generally are unavailable in the extensive rice fields of the Sacramento Valley. During our study, observations in the Tulare basin of large numbers of stilt and avocet nests placed in fallow fields near agricultural canals and ditches, and even some located between rows of growing crops such as cotton, also suggest a lack of high-quality nest sites. Although compensation habitat created to mitigate the impacts of evaporation ponds can support large numbers of nesting stilts and avocets, the design of some may lead to increased mortality from crowding. At one compensation habitat, long earthen lanes, alternating with parallel lanes of open water, expose mobile chicks to pecking by adults when chicks wander from their territories or move along the earthen lanes

to reach suitable foraging areas (Hansen pers. obs.).

Securing a dependable, high-quality water supply for wetlands is a never-ending challenge in light of California's expanding human population, arid climate, and water-delivery system already stretched to its limits. Competition for increasingly valuable water is bound to intensify, and recent gains from legislation providing a reliable water supply for wetlands (e.g., Central Valley Project Improvement Act; Title 34 of Public Law 102-575) could be reversed in the future. Maintaining shallow water in wetlands in the breeding season is particularly costly because of high evaporation rates in the Central Valley at that time. Also, municipal water districts have begun to purchase water from water districts in the Sacramento Valley, which can affect the amount of rice available to shorebirds and the agricultural drainwater available for managed wetlands (C. Isola in litt.).

Management and Research Recommendations

Despite known and potential threats, breeding shorebirds should benefit from wetland restoration and enhancement for waterfowl and other wildlife (e.g., USFWS 1990) and, particularly, from heightened interest in increasing the amount of wetland habitat in summer. Hence we recommend that a high priority be placed on increasing the acreage of summer wetland habitat to augment breeding shorebird populations. This increase would counter historic wetland loss and potential future loss of various artificial environments used by shorebirds. Increasing shorebird breeding habitat could be accomplished by buying land with water rights, making structural improvements on land to accept surplus water in extremely wet years, or providing private landowners with economic incentives to flood wetlands in summer (e.g., Conservation Reserve Program, Landowner Incentive Program, California Waterfowl Habitat Program).

As needed, the suitability of established wetlands to breeding shorebirds should be enhanced by providing more barren or sparsely vegetated nesting islands and increasing foraging opportunities by maintaining shallow water and making gradual slopes on the shores of ponds and islands (e.g., Engilis and Reid 1997). Wetland restoration with hydrologic or ecologic equivalents based on the scale of a landscape would be more valuable than that on the scale of an individual project (Bedford 1996; see Shuford et al. 1998) so that in the long term restoration will provide a mix of habitats reflective of historic conditions. Where feasible, we recommend augmenting saline playas in the Tulare basin; providing saline water alone will not be enough to attract certain species, such as the Snowy Plover, that also need alkali flats for nesting and foraging (e.g., Paton and Bachman 1997).

Shorebirds would likely benefit substantially from land acquisition and infrastructure improvements that can be used to take advantage of surplus water in very wet winters to provide boom conditions for nesting. In the Tulare basin, an alternative is to purchase retired agricultural lands and ready them with impoundments (with islands) that could be flooded when surplus water becomes available. In the San Joaquin and Yolo basins, an option is to install water-diversion structures along bypasses next to established wetlands. Water could then be circulated into ponds, slowing it down and spreading it

out, then back into bypasses downstream, thus providing shorebird habitat while avoiding the creation of stagnant water areas that might promote botulism outbreaks or excessive mosquito breeding. Because of the current extensive use of croplands, particularly rice, by shorebirds, it would be beneficial to work with agricultural interests to enhance the suitability of fields to nesting and foraging shorebirds, while maintaining high crop yields, or to provide economic incentives to maintain islands or open foraging areas on a small portion of fields. Even if densities of breeding shorebirds in agricultural fields remain low relative to those in managed wetlands, agriculture is much superior to urban and suburban development. When possible, landowners should be provided with incentives to keep producing crops like rice that benefit shorebirds and other waterbirds, particularly through key legislation such as the periodically renewed federal farm bill.

It would be valuable to assess the reproductive rates of stilts and avocets in various habitat types in the Central Valley to identify factors limiting reproduction, wetland features that support high densities of successfully breeding shorebirds, and actions that can be taken to increase nesting success. Important factors may be the number, type, and location of nesting islands, extent and height of wetland vegetation, water depth, and diversity of relief in pond bottoms. It also would be important to identify landscape features that influence the size and success of populations of nesting shorebirds, including the size of individual wetlands and their proximity to other wetlands, other habitats, or human activities. Because of the high use of rice fields by breeding shorebirds, a study of reproductive success in this habitat would be particularly relevant. A study of the effects of water management in wetlands, where rapid spring drawdowns can leave shorebird nests and broods high and dry (C. Isola in litt.), would also be valuable.

Censuses of breeding shorebirds are needed to determine population size and habitat use in important but poorly known areas of the state. These include Suisun Marsh (where the Central Valley transitions to the San Francisco Bay estuary), the southern California coast, and large sites east of the Cascade–Sierra axis.

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Black-necked Stilt

Sketch by Tim Manolis

GEOGRAPHIC VARIATION IN CACTUS WREN SONGS

JONATHAN L. ATWOOD and SUSANNAH B. LERMAN, Conservation Biology Program, Department of Environmental Studies, Antioch University, New England, 40 Avon Street, Keene, New Hampshire 03431-3516 (current address of Lerman: Graduate Program in Organismic & Evolutionary Biology, University of Massachusetts Amherst, 319 Morrill Science Center South, 611 N. Pleasant Street, Amherst, Massachusetts 01003)

ABSTRACT: We compared Cactus Wren (*Campylorhynchus brunneicapillus*) songs recorded in three regions of coastal southern California (Ventura and Los Angeles counties, Orange County, and San Diego County), Baja California, and the Sonoran and Chihuahuan deserts. On the basis of four measures of the fine structure of individual notes, songs of wrens from Baja California south of 31° N latitude were most distinct; songs of birds from the three regions of coastal southern California were similar and most like songs given by birds in Baja California. Cactus Wrens in coastal southern California are geographically isolated, morphologically different, and differ in song behavior from those in Baja California. Compared with Sonoran and Chihuahuan desert populations, Cactus Wrens in coastal southern California are geographically isolated, differ in song behavior, and occur in a unique and unusual ecological setting. These characteristics suggest that the U.S. Fish and Wildlife Service should reconsider its 1994 decision denying coastal Cactus Wrens protection under the Endangered Species Act because the population was deemed to not meet the definition of a "distinct population segment."

The Cactus Wren (*Campylorhynchus brunneicapillus*) is one of the most familiar and conspicuous members of the avifauna of North America's arid regions. Distributed commonly and widely throughout the lowlands of Baja California and the Mojave, Sonoran, and Chihuahuan deserts, the species also occurs in coastal southern California and extreme northwestern Baja California (American Ornithologists' Union 1998).

Rea and Weaver (1990) reviewed the nomenclatural history and distributional limits of various subspecies of the Cactus Wren in detail; these authors observed that the peninsular forms (*C. b. bryanti* and *affinis*) are so distinct morphologically from the continental populations (*C. b. brunneicapillus*, *anthonyi*, *couesi*, *seri*, and *guttatus*) that the two groups "look like different species." More recently, on the basis of differences in mitochondrial DNA (mtDNA), Zink et al. (2001) similarly concluded that the peninsular and continental forms represent "evolutionarily significant unit[s] (Moritz 1994), if not phylogenetic species (Cracraft 1989)."

Particular attention has recently focused on the taxonomy of Cactus Wren populations found in coastal southern California, from Ventura County south through San Diego County and into extreme northwestern Baja California. These populations are geographically separated from both the peninsular birds of Baja California and from populations in the Sonoran and Mojave deserts of California. Rea (1986) suggested that the coastal population of Cactus Wrens inhabiting southern California and extreme northwestern Baja California be recognized as a newly described subspecies, *C. b. sandiegensis*. Later, Rea and Weaver (1990) revised the proposed distribution (and spelling) of *sandiegensis* to extend from Valle de las Palmas (32° 24′ N latitude) in

extreme northwestern Baja California only as far north as southern Orange County (San Juan Creek), California; they assigned wrens on the coastal slope of Ventura, Los Angeles, Riverside, San Bernardino, and northern Orange counties to the wide-ranging Sonoran Desert subspecies *anthonyi* (= *couesi*, *sensu* American Ornithologists' Union 1957). However, Rea and Weaver (1990) commented that "some individuals [from the Los Angeles area] show some genetic influence of *C. b. sandiegensis*."

Although Rea and Weaver's (1990) evaluation of *sandiegensis* was based on plumage characters, they also stated that "we can recognize a distinct song dialect in southern coastal wrens [*sandiegensis*]. The vocalizations have a slightly lower frequency and lower pitch than more northern [coastal *anthonyi*] and eastern [desert *anthonyi*] birds, and have a raspy quality not heard in adjacent populations . . . central and northern Orange County wrens sing the Los Angeles Basin dialect." Sibley (2000) confused the issue by ascribing Rea and Weaver's (1990) description of the plumage and vocal characteristics of *sandiegensis* to all Cactus Wrens in coastal southern California, including coastal populations of *anthonyi*. Proudfoot et al. (2000) placed *sandiegensis* (and, inexplicably, *seri*) within the peninsular group, presumably on the basis of distribution.

The distribution and nomenclature of Cactus Wren subspecies is especially important with regard to the coastal birds of southern California and extreme northwestern Baja California. These wrens are entirely restricted to the coastal sage scrub plant community (Rea and Weaver 1990), widely considered to be one of the most threatened habitat types in the United States as a result of intense pressure for urban development (Hanes 1976, Kirkpatrick and Hutchinson 1977, Mooney 1977, Westman 1987, O'Leary 1990). Because of these threats, in 1990 the U. S. Fish and Wildlife Service (USFWS) was petitioned by the San Diego Biodiversity Project and Palomar Audubon Society to list the San Diego Cactus Wren (*C. b. sandiegensis*) as an endangered species under the U.S. Endangered Species Act (ESA). The ESA uses the term "species" to include "any distinct population segment of any species of vertebrate." That is, from a legal standpoint, the word "species" may or may not have any taxonomic connotation. The USFWS rarely uses population-level listings; when they are applied, such rulings require proof not only that a population is imperiled but also that it is both discrete and significant (U.S. Department of the Interior and U.S. Department of Commerce 1996).

In response to several unpublished letters disputing the subspecific validity of *sandiegensis*, the USWFS suggested that "Cactus Wrens residing in coastal southern California may . . . constitute a distinct vertebrate population segment that could qualify for listing under the [ESA]" (USFWS 1994) and expanded the subject of the original petition from *sandiegensis* to include all Cactus Wrens found in the coastal sage scrub of southern California and extreme northwestern Baja California. Thus, circumventing the question of subspecies limits, the USFWS opted instead to assess whether *sandiegensis* and coastal populations of *anthonyi*, combined, should be afforded protection under the ESA.

The USFWS found that "all of the published literature on the status of coastal sage scrub vegetation types in California supports the conclusion

that this plant community is one of the most depleted habitat types in the United States," and that "numbers of Cactus Wrens residing in coastal sage scrub of coastal southern California have declined as a result . . . of the same factors that have . . . impacted" the California Gnatcatcher (*Polioptila c. californica*), formally designated as threatened (USFWS 1994: 45660). Nonetheless, the USFWS's final conclusion was that coastal Cactus Wrens "do not constitute a distinct vertebrate population segment" and therefore were not "a listable entity" (USFWS 1994: 45660).

The rationale supporting this decision hinged on three points (USFWS 1994: 45660). First, by broadening the petition to include all of California's coastal Cactus Wrens, including *sandiegensis* and coastal populations of *anthonyi*, the USFWS not surprisingly concluded that "no apparent morphological or other morphometric differences . . . distinguish coastal birds from other Cactus Wrens;" Rea and Weaver (1990:99–100) had earlier observed that "northern coastal Cactus Wrens [*anthonyi*, coastal populations] . . . are not taxonomically separable from adjacent desert *anthonyi*." Second, the USFWS stated that coastal Cactus Wrens lack distinctive behavioral characteristics distinguishing them from desert populations. Third, the USFWS claimed that the coastal sage scrub inhabited by Cactus Wrens in coastal southern California and extreme northwestern Baja California transitions gradually into plant communities of the Baja California peninsula that are also occupied by the species, thereby proving that the wrens of coastal southern California are "not isolated in habitat."

This paper examines the conclusion that "coastal Cactus Wrens" (*sensu* USFWS 1994) do not represent a "listable entity" under the ESA. In particular, we discuss the USFWS's contention that coastal populations do not differ behaviorally from desert birds by comparing songs recorded throughout much of the species' range. We also consider the USFWS's statement that coastal Cactus Wrens are not ecologically isolated from conspecifics in the Baja California peninsula, especially in light of vocal, morphologic, and genetic differences between continental and peninsular populations.

METHODS

We recorded songs of 157 Cactus Wrens from 1982 to 1992 in the coastal sage scrub of southern California (Ventura and Los Angeles counties, n = 24 individuals; southern Orange County, n = 17; San Diego County, n = 17), Baja California south of 31° N latitude (n = 19), the Sonoran desert of southeastern California, southern Arizona, and northern Sonora, Mexico (n = 49), and the Chihuahuan desert of southern Texas (n = 31) (Figure 1). We used a Marantz PMD221 cassette recorder and a Sennheiser ME88 directional microphone. Recordings used in this study have been deposited in the Macaulay Library, Cornell Laboratory of Ornithology.

We measured four characteristics of each song by means of Canary bioacoustics software version 1.2 (Charif et al. 1995). We chose variables that could be measured consistently from all recordings and because they seemed likely to reflect the verbal descriptions ("slower . . . lower pitch . . . raspy quality") used by Rea and Weaver's (1990) discussion of the song of *sandiegensis*. RATE was defined as the number of notes per unit time, with

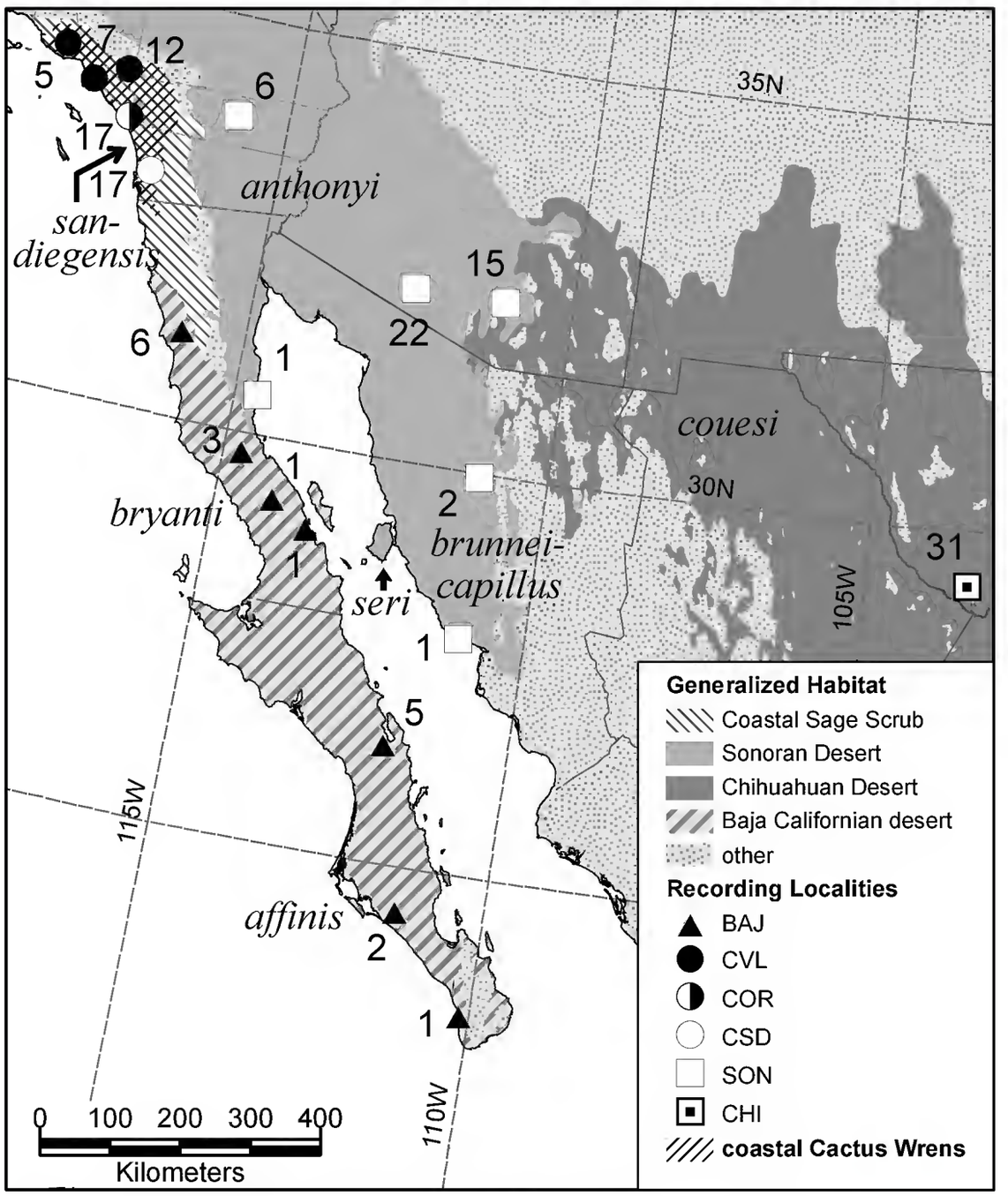

Figure 1. Localities where we sampled Cactus Wren songs relative to generalized habitat and subspecies distributions. Numbers indicate multiple individuals recorded at a single location (for clarity, nearby localities are represented by a single point). Boundaries of broad ecological regions follow Olson et al. (2001); "Baja Californian desert" consists of ecoregions described as "Baja California desert," "Gulf of California xeric scrub," and "San Lucan xeric scrub." Area defined by Olson et al. (2001) as "California coastal scrub and chaparral" referred to here as "coastal sage scrub" (current extent of community much reduced from that shown here). CVL, coastal, Ventura and Los Angeles counties; COR, coastal, Orange County; CSD, coastal, San Diego County; SON, Sonoran Desert; CHI, Chihuahuan Desert; BAJ, Baja Californian desert.

Δ time calculated between times (in seconds) of peak intensity of selected notes; at least three successive notes were included in this measurement, and values were then averaged (Figure 2). Measurements of RATE were obtained with the spectrogram display set at time resolution = 2.902 milliseconds. Frequency and intensity measures were obtained from that note of the song at that note's peak intensity; the spectrogram's frequency resolution for these measurements was set at 5.38 Hz. Peak frequencies (kHz) and average intensities (W/m^2) were measured from each resulting 11.6-millisecond time "slice" and then used to calculate the mean frequency (FREQ) as well as coefficients of variation describing each note's variability in frequency (CV_FREQ) and intensity (CV_INTEN). To avoid possible inclusion of various background noises, frequency measurements were made after sounds <0.75 kHz and >2.5 kHz were filtered from the signal.

Songs that we subjectively judged to be typical of a particular individual were selected randomly for analysis. Cactus Wrens have a large vocal repertoire, including many variations of their adult song (Proudfoot et al. 2000). However, most of our recordings covered relatively short intervals, during which only a single song type was usually evident. Also, any variability that might be introduced into the analysis by inclusion of nonhomologous song types would have no geographic basis and would thus serve only to lower the likelihood of detecting differences among regions. Nonetheless, to address the possibility that some recordings might represent nonhomologous song

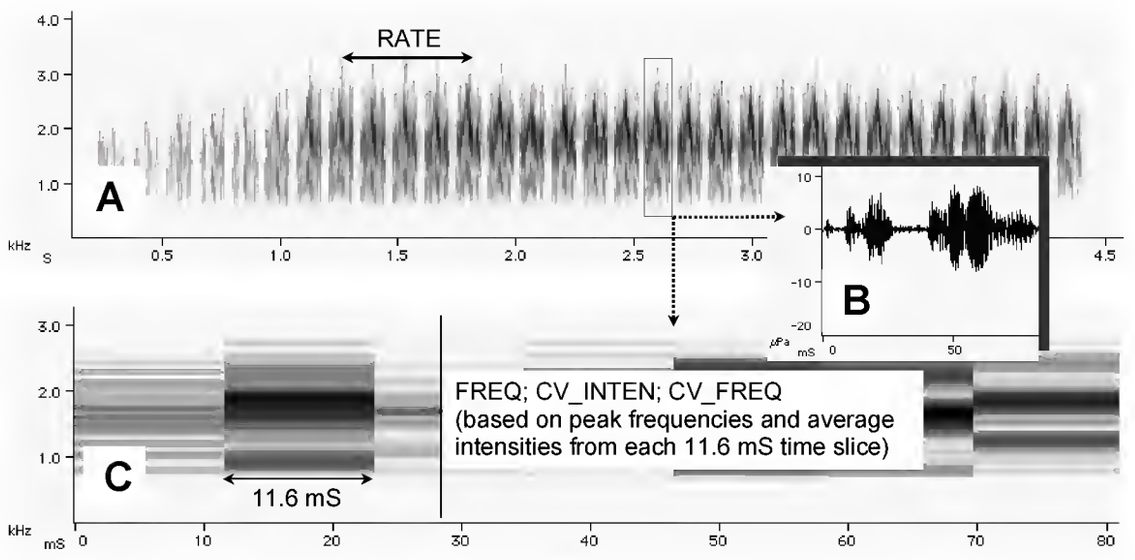

Figure 2. Measurements used in analysis of variation in Cactus Wren songs. A, spectrogram display, frequency resolution 43.07 Hz, time resolution 2.902 milliseconds, used as basis of the variable RATE (notes per unit time). B, waveform display, showing instantaneous pressure (ΔPa) as a function of time, for a single selected note. Such variations were measured from displays like that shown for a single note in C (spectrogram display, frequency resolution 5.38 Hz, time resolution 11.6 milliseconds), with the selected note being chosen as that where the peak intensity of sound occurred within the song. Peak frequencies (kHz) and average intensities (W/m^2) were measured from each 11.6-millisecond time "slice" of this note and then used to calculate the mean frequency (FREQ) and coefficients of variation (standard deviation/mean) for intensity (CV_INTEN) and frequency (CV_FREQ).

types, we excluded from analysis six songs (Baja California, 2 individuals; Sonoran Desert, 1; Ventura and Los Angeles counties, 1; San Diego County, 2) that were identified as multivariate outliers by jackknife Euclidean distances >2.5 standard deviations (Tabachnik and Fidell 1989, McCune and Grace 2002, Sall et al. 2004).

Quantitative analyses were performed using JMP-IN 5.1 statistical software (Sall et al. 2004). Variables were $\log_{10}$-transformed to improve normality of distributions.

RESULTS

Although Cactus Wren songs were superficially similar throughout the sampled range (Figure 3), we detected significant differences among the six regions in the fine structure of individual syllables (Figure 4). Mean frequency (FREQ) was higher in birds from the Baja California desert than in populations from all the other regions. The other measured variables (RATE, CV_INTEN, and CV_FREQ) all varied significantly by region, although the multiple comparison tests elucidated no consistent, obvious geographic patterns.

Multivariate means of the six regions differed significantly (MANOVA; Wilks' $\lambda = 0.53$, approx. $F_{20,472} = 5.00$, $P < 0.0001$; Figure 5). Song characteristics of the continental populations appeared to transition gradually from the Chihuahuan Desert to the Sonoran Desert and thence from north to south in coastal southern California. Songs of the peninsular populations showed the greatest contrast with songs of birds from the Sonoran and Chihuahuan deserts; songs of birds from coastal southern California were intermediate in their characteristics between those given by the Sonoran Desert and Baja California peninsula populations. Recordings from Baja California were significantly different from those of the geographically adjacent regions of the Sonoran Desert and the coastal sage scrub of San Diego County (MANOVA, least squares means contrasts; $P < 0.0001$ and $P = 0.001$, respectively). Songs of birds in the Sonoran Desert differed from those of the combined coastal populations ($P < 0.001$) and, marginally, from the geographically adjacent birds of coastal Ventura and Los Angeles counties ($P = 0.048$). Recordings of wrens from the coastal sage scrub of Ventura and Los Angeles counties differed marginally from those from coastal San Diego County ($P = 0.048$). Songs of birds from southern Orange County did not differ statistically from those recorded in coastal San Diego County ($P = 0.258$) or from birds recorded in Ventura and Los Angeles counties ($P = 0.567$), consistent with K. L. Weaver's observation (in litt., 2006) that northern and southern coastal dialects can be recognized in this area.

Hierarchical cluster analyses based on the mean values for each of the six regions yielded two different "solutions," depending on the algorithms used for construction of the clusters. Group-average (UPGMA), centroid, Ward's minimum-variance, and complete (farthest-neighbor) linkage methods all produced dendrograms in which the most fundamental division was between the Sonoran and Chihuahuan Desert samples versus the other four sampling regions (Figure 6). In each of these approaches, the three coastal Cactus Wren samples (Los Angeles and Ventura counties; Orange

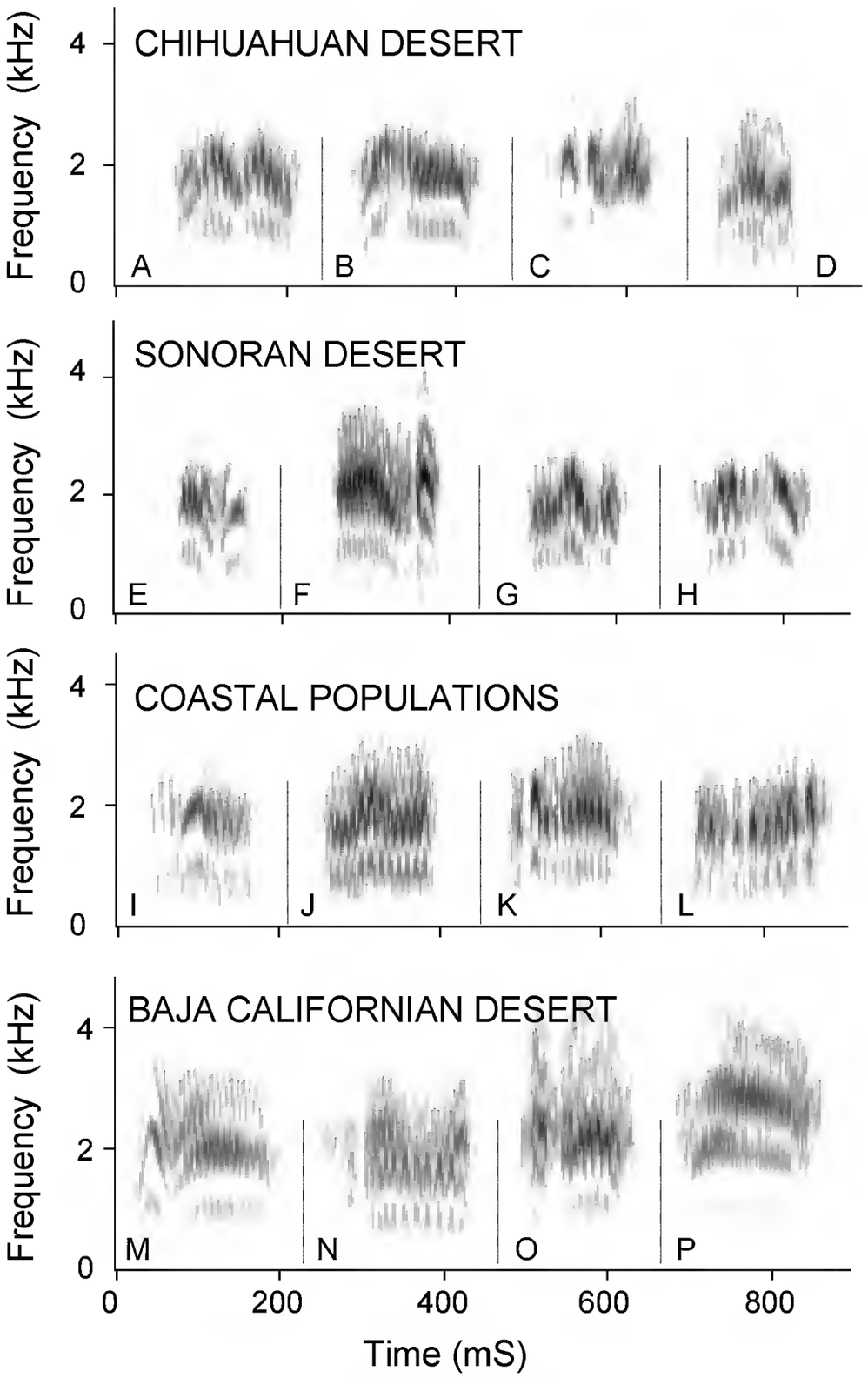

Figure 3. Variation in single notes from Cactus Wren songs recorded in four major arid regions of southwestern North America. A–D: Texas, Brewster Co., Big Bend National Park; E: California, Riverside Co., Joshua Tree National Park, Cottonwood Springs; F: Arizona, Pima Co., 3 km SE of Quijotoa; G–H: Arizona, Pima Co., Organ Pipe Cactus National Monument; I: California, Orange Co., Caspers Regional Park; J: California, San Diego Co., Lake Hodges; K: California, Los Angeles Co., Point Vicente; L: California, Ventura Co., Camarillo; M, O, P: Baja California Sur, 30 km S of Mulege; N: Baja California Sur, 15 mi SE of Santa Rita. Frequency resolution 43.07 Hz, time resolution 2.902 milliseconds.

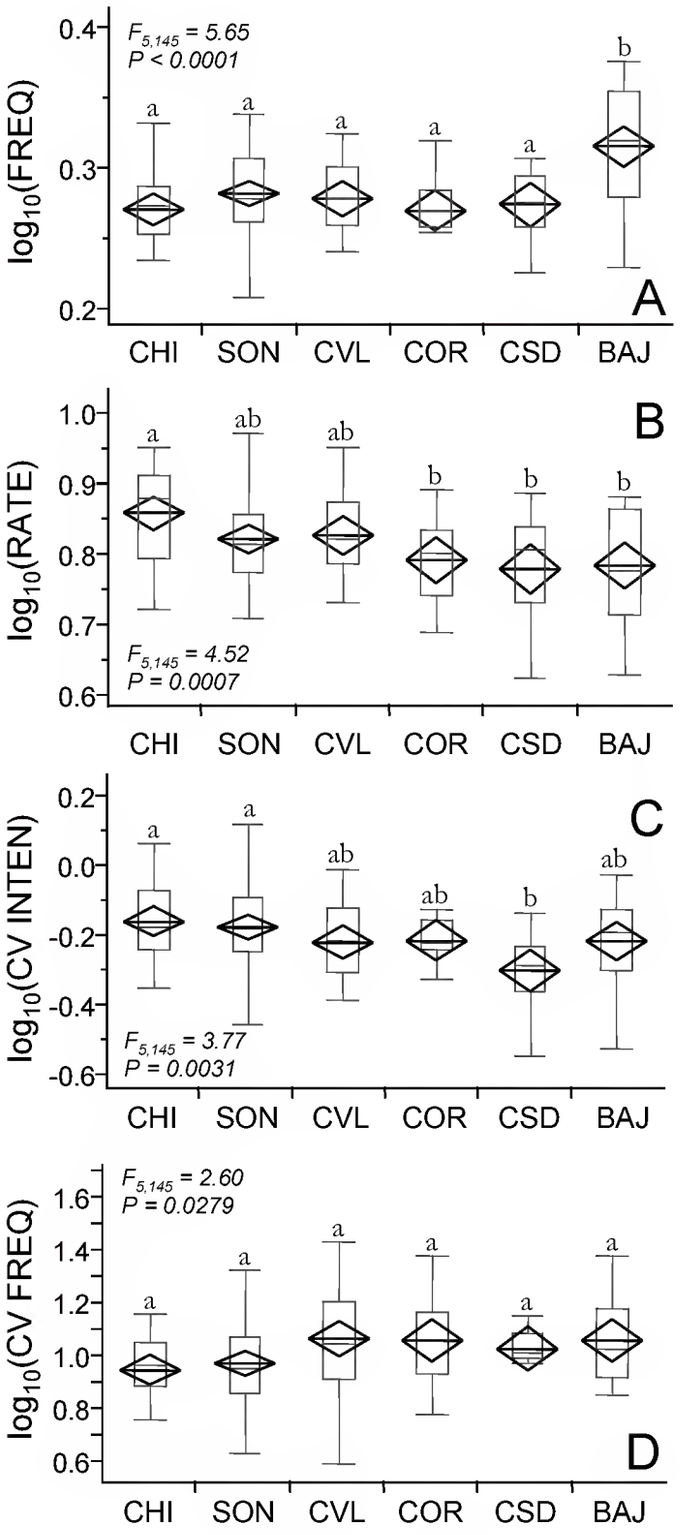

Figure 4. Univariate comparisons of four measures of Cactus Wren songs by six sampling regions. A, FREQ; B, RATE; C, CV_INTEN; D, CV_FREQ. Diamonds, indicating means and 95% confidence intervals, imposed on quantile box plots. Shared letters (a, b) identify means that are not significantly different ($P > 0.05$) according to the Tukey–Kramer honest significant difference test. CVL, coastal, Ventura and Los Angeles counties; COR. coastal, Orange County; CSD. coastal, San Diego County; SON. Sonoran Desert; CHI. Chihuahuan Desert; BAJ. Baja Californian desert.

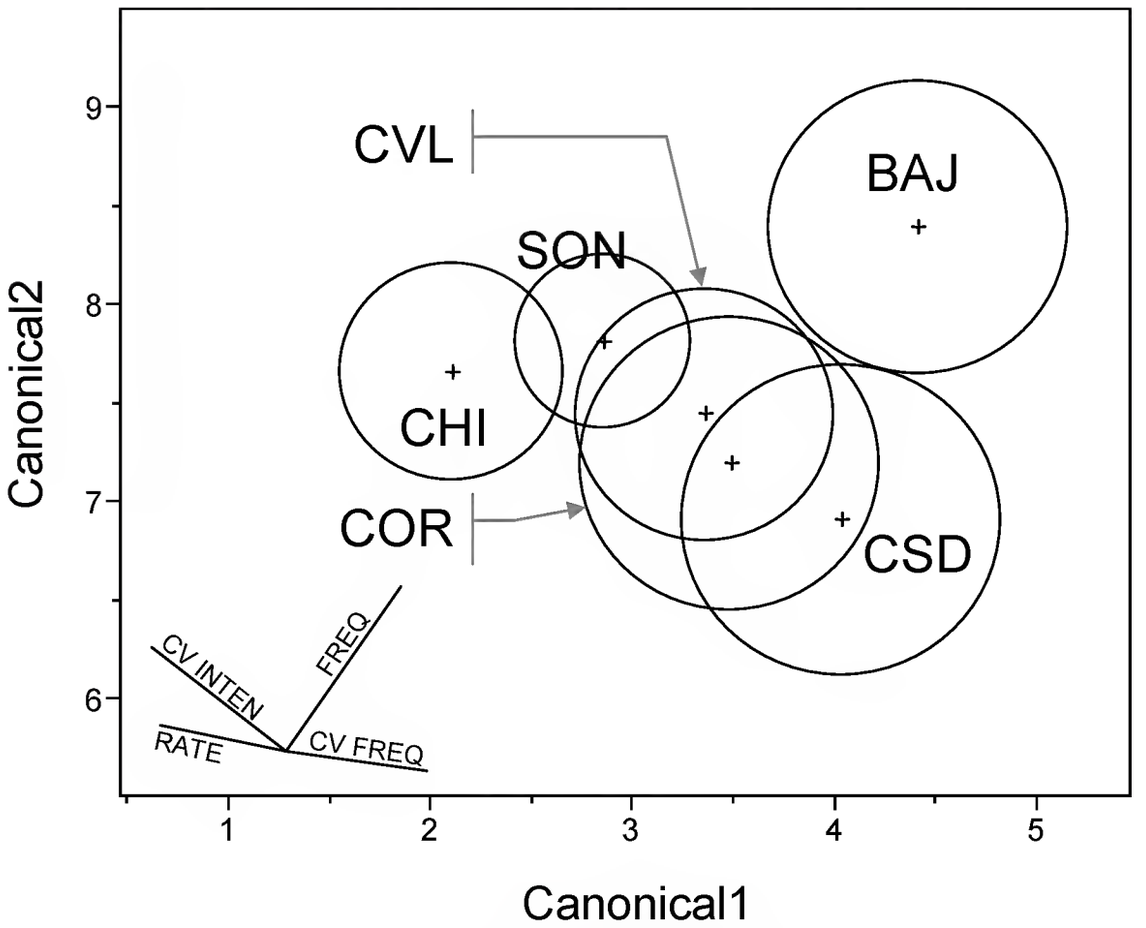

Figure 5. Multivariate means of Cactus Wren songs based on four measured variables by six sampling regions. Circles represent 95% confidence estimates. CVL, coastal, Ventura and Los Angeles counties; COR, coastal, Orange County; CSD, coastal, San Diego County; SON, Sonoran Desert; CHI, Chihuahuan Desert; BAJ, Baja Californian desert. Weightings of the four variables on each canonical axis indicated by biplot rays.

County; San Diego County) were grouped together. McCune and Mefford (1999) recommended Ward's method "as a general-purpose linkage method that minimizes distortions in the underlying space." Single-linkage (nearest-neighbor) cluster analysis, found by Milligan (1980) to perform poorly in simulations, similarly grouped together the three coastal California samples but associated these with the Sonoran and Chihuahuan Desert samples instead of with those from Baja California (Figure 6).

Discriminant-function analysis based on vocal characteristics yielded a relatively poor level of discrimination among these three primary groups (Baja California, coastal southern California, and Sonoran and Chihuahuan deserts) (Table 1). Using a cutoff in which the classification "decision" was based simply on the largest of the three calculated probabilities, rates of correct classification were 74% (Baja California), 61% (Sonoran and Chihuahuan deserts), and 60% (coastal southern California). However, only 32% of predicted probabilities used in the classification were >70%, and 20% were <50% probability. Incorrect classifications were fairly evenly distributed between alternate groups; for example, 10 songs of wrens from

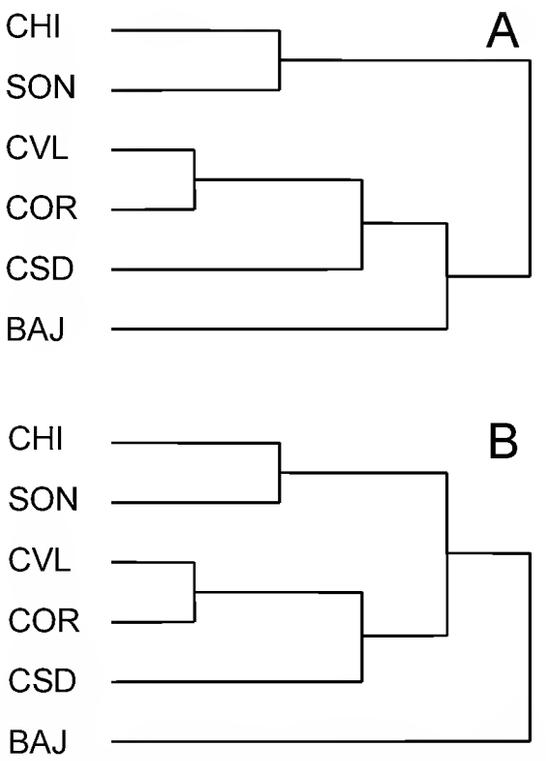

Figure 6. Dendrograms (Euclidean distance measures) based on mean values of FREQ, RATE, CV_INTEN, and CV_FREQ for six sampling regions. Dendrogram A obtained from group-average (UPGMA), centroid, Ward's minimum-variance, and complete (farthest-neighbor) linkage methods; dendrogram B shows results from single-linkage (nearest-neighbor) cluster analysis. CVL, coastal, Ventura and Los Angeles counties; COR. coastal, Orange County; CSD. coastal, San Diego County; SON. Sonoran Desert; CHI. Chihuahuan Desert; BAJ. Baja Californian desert.

coastal southern California were considered to belong to the Baja California group, and 13 were assigned to the desert category. These results merely emphasize the fact that although there are average multivariate differences among Cactus Wren songs from various geographic regions, the differences are subtle; many individuals cannot be correctly assigned to a geographic region on the basis of song characteristics measured here.

DISCUSSION

Vocal Variation

Cactus Wrens differ slightly in the fine structure of their songs over their extensive geographic range. We identified three major groupings from among our six sampling regions: (1) Sonoran and Chihuahuan deserts, (2) coastal southern California, and (3) the Baja California peninsula. However, these differences are subtle; songs given by individual birds are not easily classified correctly into one of the three groups. Although songs recorded in San Diego County (*sandiegensis*) differ statistically from recordings of coastal examples of *anthonyi* obtained in Ventura and Los Angeles counties, songs from both of these coastal regions were more like each other than those given by desert populations of *anthonyi*. Songs of birds from the

Table 1 Results of Discriminant Function Analysis of Cactus Wren Songs by Three Major Geographic Areas Identified by Cluster Analysis[a]

		Classification by Discriminant Function		
Actual Origin	*n*	Baja California	Coastal	Desert
Baja California[b]	19	14	3	2
Coastal[c]	58	10	35	13
Desert[d]	80	11	20	49

[a]Calculations based on correlation matrix of mean frequency, rate, and variations of frequency and intensity. Analysis used equal prior probabilities; classification "decisions" reflect the highest probability among the three groups.

[b]Desert regions south of 31° N.

[c]Ventura, Los Angeles, Orange and San Diego counties.

[d]Sonoran and Chihuahuan deserts.

Baja California desert were the most distinctive, being higher in frequency than those of other populations but generally similar in the other measured variables to populations in coastal southern California.

The biological basis and significance of these vocal differences is unknown; we have not conducted playback experiments to evaluate whether the birds themselves even perceive these differences. We did not assess whether these variations reflect learned dialects, genetic differences, or some combination of the two. Some other species of wrens feature pronounced song dialects that, in general, represent learned behaviors (Kroodsma 1977), and such may be the case here. Eggert's (1996) finding of localized genetic differentiation among Cactus Wrens from seven sampling areas in coastal southern California at least suggests that the small, fragmented populations in this region are adequately isolated to permit development of unique song dialects.

Conservation Implications

Should coastal Cactus Wrens be protected under the federal Endangered Species Act? The USFWS (1994) previously concluded that coastal populations have been affected by habitat losses at least as severe as those affecting the nominate subspecies of the California Gnatcatcher, which it listed as threatened in 1993 (USFWS 1993, Atwood 1993). Because in southern California the Cactus Wren has a much smaller population and is more ecologically restricted than the California Gnatcatcher (Rea and Weaver 1990), its conservation status is far more precarious. There is little doubt that the coastal populations of the Cactus Wren in southern California and extreme northwestern Baja California are severely threatened. Do these coastal birds, including but not limited to *sandiegensis*, represent a "distinct population segment" that can be considered a "listable entity" under the ESA (USFWS 1994)?

The federal government has published a policy by which it evaluates

whether a "distinct population segment" meets the ESA's definition of a "species" (U.S. Department of the Interior and U.S. Department of Commerce 1996). In particular, distinct population segments must be shown to be (1) "discrete" and (2) "significant" relative to other populations of the species.

According to the U.S. Department of the Interior and U.S. Department of Commerce (1996: 4725), populations are considered discrete when they are "markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation." The policy also allows for "some limited interchange" among discrete population segments (U.S. Department of the Interior and U.S. Department of Commerce, 1996: 4724).

Cactus Wrens in coastal southern California are clearly isolated ecologically and geographically from desert populations to the east. The profound differences between coastal sage scrub and vegetation of the Sonoran Desert have long been acknowledged by numerous authors (Shreve and Wiggins 1964, Bender 1982, Holland 1986, Barbour and Major 1988, Davis et al. 1994, Davis et al. 1995, Sawyer and Keeler-Wolf 1995, Keeler-Wolf and Barbour 1997). There are few localities where coastal sage scrub actually comes into close proximity with vegetation characteristic of the Sonoran Desert. In a distributional pattern reminiscent of that of the California and Black-tailed (*Polioptila melanura*) Gnatcatchers (Atwood 1988), San Gorgonio Pass, Riverside County, appears to be the most likely area of contact between Cactus Wrens of coastal and desert populations (Rea and Weaver 1990).

However, ongoing habitat loss caused by suburban development in southern California has largely, if not completely, isolated coastal Cactus Wrens from populations in the Sonoran Desert. As early as 1923, W. L. Dawson commented that "all proper desert areas west of San Gorgonio Pass are being threatened sharply by the human invasion. Those joyous bits of desert 'washes' . . . have become . . . cluttered up with bungalows and chicken coops . . . The Cactus Wren has receded from many parts of the San Diego–Ventura section already, and is in danger of being altogether cut off" (Dawson 1923: 667). The "bungalows and chicken coops" of southern California in the early 1920s have now been replaced by sprawling cities inhabited by over 14 million people (Southern California Association of Governments 2000; www.scag.ca.gov/census).

The USFWS's status review (USFWS 1991) concluded that "although historically connected with interior, desert populations of the Cactus Wren through the San Gorgonio Pass in Riverside County, the range of the coastal Cactus Wren now appears to be geographically disjunct as a result of the continuing urbanization of this corridor. The range limit of the coastal Cactus Wren at the west end of the San Gorgonio Pass coincides with that of the coastal sage scrub plant community. The hiatus of suitable habitat formed by the Transverse and Peninsular ranges also serves to maintain and define the disjunct distribution of coastal and interior populations of the Cactus Wren." K. L. Garrett (in litt., 1992) stated that "all of the coastal slope [Cactus Wren] populations are now functionally isolated from the desert ones," and R. L. McKernan (in litt., 1992) concurred that the "once contiguous population . . . of Cactus Wrens through the San Gorgonio Pass no longer exist[s]."

Atwood (unpubl. data) found that the average dispersal distance of juvenile coastal Cactus Wrens on the Palos Verdes Peninsula is significantly lower (1.6 ± 2.28 km, n = 71; mean ± standard deviation) than movements of dispersing California Gnatcatchers (3.2 ± 2.07 km, n = 76) in the same landscape, suggesting that coastal Cactus Wrens may be more vulnerable than gnatcatchers to the isolating effects of habitat loss and fragmentation.

Cactus Wrens in coastal southern California are also isolated ecologically and geographically from populations of the Baja California peninsula. The USFWS's (1994) assertion that the coastal sage scrub community of southern California transitions gradually into the central Baja Californian desert is not commonly held (Thorne 1976, Westman 1983, Holland 1986, Hickman 1993, Zippin and Vanderwier 1994, and Keeler-Wolf and Barbour 1997). Furthermore, the conclusion by Zink et al. (2001) that wrens in Baja California south of approximately 31° N latitude represent a genetic clade different from other populations suggests that the main comparison of relevance to the question of ecological isolation is between coastal wrens and populations in the Sonoran Desert, not between coastal wrens and Baja California populations.

Cactus Wrens have a patchy, discontinuous distribution along the narrow coastal plain of northwestern Baja California. Grinnell (1921) specifically corrected earlier authors who supposed a continuous distribution of *bryanti* from the vicinity of San Telmo (31° N) north into coastal southern California. Bancroft (1923, 1946) was unable to locate the species between Valle de las Palmas and San Telmo. Wilbur (1987) described Cactus Wrens as "very local" between Tijuana and San Telmo, specifically noting their occurrence only at Punta Banda, Ensenada (31° 43′ N) (Short and Crossin 1967); Unitt et al. (1995) ascribed wrens at this locality to *bryanti*. Although recent field work in northwestern Baja California shows that Cactus Wrens do occur, in small numbers, between San Telmo and Ensenada (R. A. Erickson in litt., 2005), there are no known records between Punta Banda and Valle de las Palmas. As in the vicinity of the San Gorgonio Pass, much of the area from Tijuana south to San Telmo has been heavily affected by grazing, farming, and urban development (F. Roberts in litt., 1994). Whatever tenuous contact zone might have existed historically between Cactus Wrens in coastal southern California and those in peninsular Baja California has likely been reduced or severed.

Are there behavioral characteristics that distinguish coastal Cactus Wrens from conspecifics in the Sonoran and Chihuahuan deserts and from the genetically distinct birds of Baja California? On the basis of the observation that both groups "almost always nest in cactus," the USFWS (1994: 45660) argued that there is no evidence of behavioral differences between desert and coastal wrens. In this study, we found that songs given by birds in coastal southern California differ significantly from those of neighboring populations in the Sonoran Desert and peninsular Baja California. Although these vocal differences have unknown biological significance, and may reflect only local, learned dialects, their existence is nonetheless consistent with the observed isolation of the coastal birds from other Cactus Wren populations.

The final aspect of evaluating whether a population warrants recognition as a distinct population segment involves considering its "importance to

the taxon to which it belongs" (U.S. Department of the Interior and U.S. Department of Commerce 1996: 4725); populations must be determined to be significant after having been found to be discrete. The U.S. Department of the Interior and U.S. Department of Commerce (1996: 4725) listed four types of evidence, any one of which is sufficient to demonstrate the biological or ecological "significance" of a discrete population. These include instances where (a) the population segment represents the sole surviving natural occurrence of a taxon that may be common as an introduced population outside its historic range, (b) loss of the population segment would result in a significant gap in the range of a taxon, (c) the population segment differs markedly from other populations of the species in its genetic characteristics, or (d) the population segment persists "in an ecological setting unusual or unique for the taxon." Of these four types of evidence, (b), (c), and (d) are of particular relevance to assessing the "significance" of coastal Cactus Wrens.

Throughout their extensive North American range, Cactus Wrens occupy arid, desert habitats—except in coastal southern California and extreme northwestern Baja California, where they occur in a dramatically different community, coastal sage scrub, that is dominated by completely different plant species, subject to completely different climatic conditions and ecosystem processes, and occupied by a completely different suite of potential predators and competitors. The rationale recently put forward by the USFWS (2003: 20231) in support of its proposed recognition of U.S. populations of the California Gnatcatcher as a distinct population segment is equally valid with regard to coastal Cactus Wrens: "the ecological setting inhabited by the species north of the border is . . . unique within its range. The species' ability to exist under these conditions suggests unique behavioral and/or physiological adaptations."

On the basis of examination of variation in the mitochondrial gene NADH dehydrogenase subunit 2 (ND2), Zink et al. (2001) concluded that there are two major lineages of Cactus Wrens, one consisting of subspecies in Baja California south of approximately 31° N latitude (*bryanti* and *affinis*), the other including all other populations (*couesi*, *anthonyi*, *brunneicapillus*, and *guttatus*). The subspecies *sandiegensis* and *seri* were not studied in this analysis.

The only Cactus Wrens from the coastal slope of southern California sampled by Zink et al. (2001) were six individuals from the Palos Verdes Peninsula, Los Angeles County. However, because mtDNA is transmitted via the mother only, and because the samples used by Zink et al. study consisted of feathers taken from three juveniles in each of two nests (Atwood unpubl. data), presumably only two females were actually represented. In these individuals the mitochondrial gene studied was similar to that in birds from the Sonoran and Chihuahuan deserts and differed from that in birds of the Baja California peninsula.

Farther south, along the coast of northwestern Baja California, Zink et al. (2001) collected four specimens at Camalu, approximately 31° N latitude. Of these, one belonged to the "eastern haplotype" (i.e., the widespread *couesi–anthonyi* group of the Sonoran and Chihuahuan deserts), one to the "southern haplotype" (i.e., the *bryanti–affinis* group of Baja California). The remaining two specimens "proved difficult to sequence but were definitively

typed as southern" (Zink et al. 2001:6).

The co-occurrence of both genetic clades at this locality is intriguing but impossible to interpret without comparable data from Cactus Wren populations in coastal southern California and northwestern Baja California. Does the presence of the *couesi–anthonyi* ("eastern," *sensu* Zink et al. 2001) haplotype at Camalu reflect a connection, along the coast of Baja California and into coastal southern California, with wren populations to the north? Or, instead, a connection to the east with wren populations in the Sonoran Desert near San Felipe? Similarly, it is also impossible to conclude, from available genetic data, whether *sandiegensis* belongs to the *bryanti–affinis* clade, to the *couesi–anthonyi* clade, or, as suggested by P. Unitt (in litt., 2007), whether *sandiegensis* might have arisen "through secondary intergradation between *anthonyi* and *bryanti*, then formed a more stabilized population when gene flow from the north and south was restricted."

Zink (2004: 562) argued that if the goal of conservation is to "protect historically unique segments of biological species" there are only two groups of Cactus Wrens that might conceivably "merit conservation attention": (1) populations in central and southern Baja California (the *bryanti–affinis* lineage) and (2) all other populations of the species (the *couesi– anthonyi* group). Under this logic and the assumption—with very limited data—that all coastal Cactus Wrens are correctly included within the *couesi–anthonyi* group, then Cactus Wrens found on the coastal slope of southern California would not be given special conservation consideration. Zink's premise, however, is inconsistent with the Endangered Species Act and its legal or policy interpretations. Genetic differentiation is merely one of several criteria by which populations can be considered "discrete and significant." Restricting conservation efforts only to those populations that have been isolated long enough to permit divergence of mtDNA could interfere with exactly the types of processes that might, in the future, yield new genetic types.

We believe that all Cactus Wrens in coastal southern California and extreme northwestern Baja California, including but not limited to *sandiegensis*, meet the federal government's definition of a "distinct population segment" that is both discrete and significant, and that protection of these birds under the U.S. Endangered Species Act is warranted. Compared with wrens in Baja California south of 31° N latitude, coastal Cactus Wrens differ morphologically, are isolated geographically, and have different songs. Compared with Sonoran and Chihuahuan desert populations, coastal Cactus Wrens are isolated geographically, have different songs, and occur in a unique and unusual ecological setting. The USFWS's (1994) conclusion that the coastal Cactus Wren, although threatened with extinction, does not constitute a "listable entity," should be revisited.

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EVIDENCE OF DOUBLE-CLUTCHING BY BRANDT'S CORMORANTS ON ALCATRAZ ISLAND, CALIFORNIA

BENJAMIN L. SAENZ and JULIE A. THAYER, Marine Ecology Division, PRBO Conservation Science, 3820 Cypress Drive #11, Petaluma, California 94954; blsaenz@prbo.org

ABSTRACT: Double clutches of eggs in the same season are rare among seabirds and, to our knowledge, never recorded heretofore in Brandt's Cormorant (*Phalacrocorax penicillatus*). We report here seven cases of second clutches for this species observed at a colony recently established on Alcatraz Island in San Francisco Bay, California. Chicks hatched from two of the seven second clutches, but no chicks survived to fledge. Over eight years of observation (1997–2004), second clutches were laid from 2000 to 2003 only.

Laying of a second clutch following successful fledging of a first brood, or double-clutching, is rare in seabirds, most of which require several months to complete one nesting cycle. Owing to seasonality of food or photoperiod, not enough time is usually available for the birds to complete more than one cycle (Johnsgard 1993, Hamer at al. 2002). Among the Phalacrocoracidae, only the European Shag (*Phalacrocorax aristotelis*; Wanless and Harris 1997) and possibly the Great Cormorant (*P. carbo*) in Japan (Brazil 1991) have infrequently produced second clutches. Other species, including the Double-crested Cormorant (*P. auritus*; Rauzon et al. 1989), Guanay Cormorant (*P. bougainvillii*; Murphy 1936), King or Rough-faced Shag or Cormorant (*P. carunculatus*; Nelson 1971), and Pied Cormorant (P. varius; Lalas 1979), are suspected of occasional double-clutching.

To our knowledge, second clutches have not been observed previously in Brandt's Cormorant. No second breeding attempts have been recorded during 34 years of monitoring of the world's largest colony of Brandt's Cormorant on Southeast Farallon Island, California (Boekelheide at al. 1990, Nur and Sydeman 1999, PRBO unpubl. data).

From 1997 to 2004, we observed Brandt's Cormorants and other seabirds breeding on Alcatraz Island, San Francisco Bay, as part of a long-term monitoring program. Here we present evidence of seven cases of second clutches among Brandt's Cormorants on Alcatraz Island from 2000 to 2003.

METHODS

Alcatraz Island (37° 49′ N, 122° 25′ W), located near the mouth of the San Francisco Bay estuary (Golden Gate), is home to a breeding colony of over 1000 Brandt's Cormorants, as well as several other marine birds. We monitored clutch size and chick productivity at 59–89 Brandt's Cormorant nests per year on Alcatraz from 1997 to 2004. These numbers represented 19–38% of the island's population of breeding Brandt's Cormorants, estimated as a count of the number of active nests. We recorded nest contents twice weekly from blinds, using 10 × 42 binoculars, from March through September each year. Actual laying may have taken place up to four days

earlier than reported. Neither adults nor chicks are marked on Alcatraz because of the inaccessibility of nesting areas and sensitivity of the species to human disturbance (Boekelheide at al. 1990, Wallace and Wallace 1998).

RESULTS

On the basis of three assumptions, we observed what we interpreted as seven cases of double clutches between 2000 and 2003: (1) nest building and courtship associated with pair bonding between two new mates occurs before egg laying (Williams 1942, pers. obs.), (2) adult Brandt's Cormorants of both sexes are territorial and defend the nest site from other conspecifics (Williams 1942, Boekelheide at al. 1990), and (3) Brandt's Cormorants identify and feed only their own chicks (Carter and Hobson 1988).

In each of these seven cases, a second clutch was laid in a nest bowl from which parents had successfully fledged at least one chick. In one instance, a second clutch was laid 14 days before the first brood left the territory permanently; it is often difficult to ascertain exactly when Brandt's Cormorant chicks fledge, as they remain in the vicinity after they no longer frequent the actual nest and continue to be fed by parents. Presumed parents continued to occupy the nest bowl between clutches, indicating that a new pair had little opportunity to take over the nest. No new nest building (besides regular maintenance) or courtship displays were observed before the laying of second clutches. The absence of these normally observed behaviors suggests that the pairs at these nests had already bonded and that observed second clutches were likely laid by the same previously successful parents. In all cases, chicks from first clutches appeared dependent upon the parents for food during initiation of the second clutch, as we regularly observed incubating parents feeding fully feathered chicks at these nests.

We observed one case of double-clutching each year in 2000, 2001, and 2003, and four cases in 2002. The size of second clutches ranged from one to four eggs. Of seven second clutches, only two hatched (both in 2002), and no chicks fledged from them. The size and success of first clutches varied from two to four eggs, and from one to three chicks fledged. The chronology of all cases of double-brooding was similar. Pairs that laid second clutches began laying eggs earlier than the average date for both the colony as a whole and their particular subcolony (Table 1). These pairs were often the first to lay in the entire colony. Females began laying second clutches between 60 and 97 days after beginning first clutches (mean 79 days). In the single case of double-clutching in 2003, the second clutch was laid, and lost, before the single chick of the first brood fledged (Figure 1). All nests of pairs that produced second clutches were located very close to one another, in the oldest section of the Alcatraz colony. In each year that they occurred, the second clutches were the last eggs laid among observable nests in the colony.

DISCUSSION

Unlike successful second broods of European Shags (Wanless and Harris 1997), the rare second clutches we report here did not confer any fitness

Table 1 Characteristics of Seven Second Clutches Laid by Brandt's Cormorants on Alcatraz Island, California

	2000	2001	2002				2003
Colony mean lay date	24 Apr (n = 59)	21 Apr (n = 79)	18 Apr (n = 88)				5 May (n = 62)
Date first clutch laid	6 Apr	27 Mar	22 Mar	22 Mar	29 Mar	5 Apr	5 Apr
First-clutch eggs laid (n)	2	3	4	4	3	≥ 3	4
First-brood chicks fledged (n)	1	3	2	2	2	1	1
Date first brood last observed	2 Jul	21 Jun	13 Jun	16 Jun	23 Jun	30 Jun	28 Jun
Date second clutch laid	15 Jun	14 Jun	27 Jun	20 Jun	20 Jun	16 Jun	4 Jun
Second-clutch eggs laid (n)	1	2	3	2	1	4	3
Second-brood chicks hatched (n)	0	0	3	0	0	1	0

Figure 1. An adult Brandt's Cormorant stands over a second clutch, along with a large chick from the first clutch, on Alcatraz Island, California, 5 June 2003.

Photo by Benjamin L. Saenz

advantage to the pairs that laid them. Decreasing food resources, decreasing day-length, decreasing colony attendance, or other cues may have triggered abandonment of these second clutches and broods. The simultaneous duties of provisioning chicks from the first brood and incubating a second clutch represent a high level of energy expenditure by the parents. Provisioning the first brood may have interfered with incubation, contributing to the failure of the second clutch or brood. In contrast to most seabirds, Brandt's Cormorants lay large clutches composed of relatively small eggs (Boekelheide et al. 1990), and on Alcatraz pairs regularly fledge two to four chicks (Saenz et al. 2006). Therefore attempting a second brood may not represent a costly life-history strategy in this species.

The location of Alcatraz in the productive waters of San Francisco Bay as well as favorable oceanographic conditions may have triggered the extra reproductive effort seen by these pairs of Brandt's Cormorants. Years of cold water (Boekelheide et al. 1990) and associated high recruitment of juvenile rockfish (Nur and Sydeman 1999) have been positively correlated with the breeding success of Brandt's Cormorants in our study area. During 2001 and 2002 in particular, waters off the California coast were cold and highly productive (Thomas et al. 2003). These oceanographic conditions likely allowed Alcatraz Brandt's Cormorants to begin the breeding season in prime breeding condition. In addition, Brandt's Cormorants on Alcatraz routinely begin breeding earlier than those on Southeast Farallon Island, 48 km offshore from Alcatraz (PRBO unpubl. data), presumably because of favorable conditions offered by the San Francisco Bay. Brandt's Cormorants are able to exploit a variety of benthic and pelagic habitats when foraging (Ainley et al. 1981), and we often observed them foraging in San Francisco Bay near Alcatraz. The large amount of accessible benthos and other productive habitats available to cormorants foraging near Alcatraz may have contributed to early laying of first clutches and may have allowed birds to remain in breeding condition long enough to lay second clutches.

The conditions under which second clutches were laid on Alcatraz are similar to those reported for other seabirds. Ainley at al. (1990) proposed that conditions early in the breeding season are a principal determinant in whether Cassin's Auklets (*Ptychoramphus aleuticus*) lay second clutches on the Farallon Islands, and Wanless and Harris (1997) came to a similar conclusion concerning double-brooding European Shags. Likewise, we suggest that Brandt's Cormorants on Alcatraz Island attempted second clutches because of early or extended favorable breeding conditions.

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NOTES

NOTEWORTHY BIRD RECORDS FROM SINALOA, MÉXICO

MARCO ANTONIO GONZÁLEZ-BERNAL, Universidad Autónoma de Sinaloa, Ciudad Universitaria, Culiacán, Sinaloa, México

JOSÉ ALFREDO CASTILLO-GUERRERO, Centro de Investigación Científica y de Educación Superior de Ensenada, Apdo. Postal 2732, Ensenada, Baja California, México

CECILIA DEL ROCÍO HERNÁNDEZ-CELIS, Pronatura A. C., Blvd. Culiacán 3773, Culiacán, Sinaloa, México

ERIC MELLINK, Centro de Investigación Científica y de Educación Superior de Ensenada, Apdo. Postal 2732, Ensenada, Baja California, México; emellink@cicese.mx

To date no general account of the birds of Sinaloa has been published. The subtropics, warm desert, and montane habitats converge in Sinaloa, making the state an area of high bird diversity. Of Sinaloa's habitats, the coast has been studied the most. This coast includes a series of wetlands known to be important to birds. For example, Bahía Santa María–La Reforma and Ensenada Pabellones, two of the best studied areas, are key stopover and wintering sites for shorebirds (Engilis et al. 1994) and waterfowl (Kramer and Migoya 1989). They also sustain important populations of breeding and resident birds (Carmona and Danemann 1994, Howell and Webb 1995, González-Bernal et al. 2003). Yet ornithological research in Sinaloa has been limited, and knowledge of the state's birds is far from complete. Here we report some noteworthy records that we have made since 1998, mostly in the two bays mentioned above, but also elsewhere along the coast and at a few inland sites.

Breeding Species

Mexican Duck (*Anas platyrhynchos diazi*). On 17 April 2003 we found a road-killed female (sex based on its heavily mottled, brown-orange bill) next to an irrigation ditch near Costa Azul (25° 11′ 15″ N, 108° 05′ 48″ W), Bahía Santa María–La Reforma. This subspecies occurs primarily in the Mexican highlands (Leopold 1959, Howell and Webb 1995, AOU 1998). At least five recent observations at low elevations, however, involving several individuals and pairs in the valley of the Río Yaqui, southern Sonora, have been attributed to the Mexican Duck (Palacios and Mellink 1995, Russell and Monson 1998, Mellink unpubl. data). Another wild female Mallard (*A. p. platyrhynchos*) or Mexican Duck was noted by James Pike in southern Sinaloa (L. R. Hays in litt.).

Although the possibility of these birds' being domestic Mallards has been considered, all the individuals recorded have resembled the female Mallard only, even during the breeding season (14 May 1994, Palacios and Mellink 1995; 29 June 2002, our data). Moreover, Leopold (1959) reported Mexican Ducks from Tepic, Nayarit, and a pre-1859 specimen of a Hawaiian Duck (*A. wyvilliana*) reportedly from Mazatlán was either misattributed or misidentified (AOU 1998); if the latter, the bird was perhaps a Mexican Duck. It is unlikely that this species has been deliberately introduced in the area. In any case, when ducks are kept domestically they are domestic forms of the Mallard or Muscovy Duck (*Cairina moschata*). Rather, favored by irrigation for agriculture, Mexican Ducks could have colonized the region.

Anhinga (*Anhinga anhinga*). This species has been reported from southern Sinaloa southward (Howell and Webb 1995), and there are a number of records from the lower Río Yaqui in southern Sonora (Russell and Monson 1998). We observed it throughout

the year at Ensenada Pabellones, with as many as eight individuals at any one time. On 13 March 2001 we found two nests on the higher branches of black mangrove trees (*Avicennia germinans*), about 12 m above the water.

Boat-billed Heron (*Cochlearius cochlearius*). This species had been reported previously north to southern Sinaloa (Howell and Webb 1995). Our observations at Ensenada Pabellones extend its range north about 250–300 km. On 13 March 2003 we saw one pair nesting in red mangrove (*Rhizophora mangle*) on a small islet (~200 m^2; 24° 23′ 03″ N, 107° 34′ 17″ W) in Ensenada Pabellones, possibly coinciding with the beginning of the breeding season. Between 29 February and 14 May 2004 we found 28 pairs nesting at the same place. We have not seen the species after August.

Yellow-breasted Crake (*Porzana flaviventer*; Figure 1). We observed this species 17 times between 21 January 2002 and 14 May 2004 (21 Jan, 12 Feb, 1 Mar, 14 Apr, 14 May 2002; 23 Jan, 21 Feb, 28 Mar, 27 Apr, 19 Jun, 12 Jul 2003; 14 May 2004) in an agricultural ditch adjacent to Laguna de Chiricahueto (24° 26′ 17″ N, 107° 27′ 12″ W). The vegetation here was cattail (*Typha domingensis*), water hyacinth (*Eichhornia crassipes*), and giant reed (*Arundo donax*). On 11 April we observed a pair with two completely black chicks. Identification was based on reddish-brown color, with white spots, cream-colored legs, yellowish breast, and black line between the eye and the crown (*sensu* Howell and Webb 1995). We concluded that the species was a breeding resident at this locale. Previously, on the Pacific slope, the Yellow-breasted Crake had been reported conclusively only from the state of Guerrero southward (Howell and Webb 1995, AOU 1998). Our observation suggests that an unclear Michoacán record (AOU 1983, dropped in AOU 1998) might have been valid, and perhaps other populations exist between Guerrero and Sinaloa.

Purple Gallinule (*Porphyrula martinica*). We observed this species on 15 occasions between 11 December 2002 and 14 May 2004 in Ensenada Pabellones, finding it in rivers, agricultural canals, and within the bay, associated with aquatic and emergent vegetation. Our maximum tally was of five individuals. Our record is about 200 km north of the northern range limit for the species mapped by Howell and Webb (1995),

Figure 1. Yellow-breasted Crake at Laguna de Chiricahueto, Sinaloa, Mexico, 15 February 2004.

although there was one previous record for this species from "between Charay and Culiacán" on 20 December 1973, by R. A. Erickson (L. R. Hays pers. comm.), and one from southern Sonora (Russell and Monson 1998).

Collared Plover (*Charadrius collaris*). At Ensenada Pabellones we located five nests on seven visits from 28 April to 3 June 2004. Nests were widely spaced and were on mud or salt flats, near water and cattails; some had a little gravel. There were cattle and horses walking through the colony site. At Cacaxtla (23° 41′ 37″ N, 106° 47′ 48″ W), near the Río Piaxtla, we observed two pairs on a sandy surface with gravel and some rocks. On 15 May 2005 we found another nest of this species at the same place and three nests at Mezquitillo (24° 31′ 34″ N, 107° 34′ 54″ W). Our records represent only a modest northward extension of the species' previously known breeding range (Howell and Webb 1995), but we include it here as very little information on the locations of Collared Plover colonies along the coast of western Mexico has been published.

Northern Jaçana (*Jacana spinosa*). This species is abundant year round in Ensenada Pabellones. Each year from 2002 to 2005 we found nests and eggs between mid-February and late May in agricultural canals and areas with cattail, in both fresh and brackish water. We found the species also in the Río Sinaloa (25° 39′ 34″ N, 108° 23′ 17″ W) in May 2001 and at the northern end of the Río Fuerte (25° 57′ 20″ N, 109° 14′ 54″ W) in May 2004, although we did not find breeding evidence. The species' previously known range includes only the southern part of the state of Sinaloa (Howell and Webb 1995), but it seems likely that it is a resident locally throughout most of the state's coastal plain.

Nonbreeding Species

Canada Goose (*Branta canadensis*). Two individuals were shot by hunters at Patolandia Hunting Club (24° 37′ 25″ N, 107° 43′ 22″ W), Bahía Santa María–La Reforma, in December 2000. This locality is at the southern fringe of the species' reported main winter range (Leopold 1959, AOU 1998, Howell and Webb 1995), and the record is the first for the state of Sinaloa (cf. Howell and Webb 1995). Canada Geese are not kept domestically in Mexico, and these, mixed with other waterfowl, were not likely to have been transported to the area by humans.

Red-footed Booby (*Sula sula*). We recorded one individual at Farallón de San Ignacio (25° 26′ 14″ N, 109° 22′ 47″ W) on 24 October 2004. This species is considered rare inside the Gulf of California, and the only locality in the gulf mapped by Howell and Webb (1995) is off the coast of Baja California.

White-tailed Hawk (*Buteo albicaudatus*). On 12 December 2003 we recorded one adult perched on a cottonwood on the banks of the Río San Lorenzo (24° 19′ 01″ N, 107° 22′ 23″ W), near Ensenada Pabellones. Along the Pacific coast of Mexico the species breeds locally in southern Sonora, Nayarit, and other areas (Howell and Webb 1995), but Sinaloan records are rare. L. R. Hays (unpubl. data) has records of one individual collected (11 January 1947) and one observed (24 March 2001) at Copala, and two individuals at nearby El Salto, Durango (1 September 1996).

Black Turnstone (*Arenaria melanocephala*). Between March and April 2003 we saw up to five individuals on five different occasions at Isla El Rancho, Bahía Santa María–La Reforma (25° 04′ 15″ N, 108° 03′ 33″ W). The only other records along the mainland coast south of Sonora consist of a sighting of a single bird at Punta Cerritos (north of Mazatlán), Sinaloa, on 3 April 1994 (L. R. Hays unpubl. data) and two records from Nayarit (Alden 1969, Howell and Webb 1995).

Brown Noddy (*Anous stolidus*). On 5 February 2001 we saw 22 Brown Noddies feeding 20 km from the coast (25° 31′ 14″ N, 109° 09′ 33″ W) between Topolobampo and Farallón de San Ignacio. In the Pacific this species breeds on islands and islets off southern Mexico and, although it disperses in winter, it had not been reported

previously north of the mouth of the Gulf of California (Howell and Webb 1995, Chardine and Morris 1996).

Say's Phoebe (*Sayornis saya*). Between 8 and 12 October 2002 we repeatedly observed one individual at Isla Tachichilte (25° 02′ 44″ N, 108° 07′ 56″ W), inside Bahía Santa María–La Reforma. This species had been previously reported in Sinaloa by Gómez de Silva (2003).

Phainopepla (*Phainopepla nitens*). On 25 May 2004 we saw a male and a female, apparently a pair, along the Río El Fuerte near Ahome (25° 57′ 21″ N, 109° 14′53″W) feeding on a cottonwood (*Populus* sp.) that stood adjacent to an agricultural canal. This is the first record for the state of Sinaloa (cf. Howell and Webb 1995).

Palm Warbler (*Dendroica palmarum*). We captured two individuals in mist nets in Bahía Santa María–La Reforma (25° 00′ 14″ N, 107° 59′ 19″ W) on 11 December 2002 and 17 March 2003 and three individuals in Ensenada Pabellones on 9 December 2003, 26 April 2003, and 5 February 2004. This species is a winter vagrant along the Pacific coast of Mexico, although there are no previous records for Sinaloa (cf. Howell and Webb 1995).

Brewer's Sparrow (*Spizella breweri*). This was one of the most common sparrows caught in mist nets in Bahía Santa María–La Reforma (25° 00′ 14″ N, 107° 59′ 19″ W) on 12–13 December 2002, 18–19 March 2003, 11–12 December 2003, and 7–8 February 2004 (27 captured in 8 days). The species had not been recorded previously in Sinaloa but was suspected to winter in the north of the state (Howell and Webb 1995).

Song Sparrow (*Melospiza melodia*). We captured two individuals on 26 November 2003 at Santa María–La Reforma (25° 00′ 14″ N, 107° 59′ 19″ W), and two on 9 December 2003 at Ensenada Pabellones. The species had not been reported previously south of southern Sonora along the continental Pacific slope of Mexico (cf. Howell and Webb 1995, Russell and Monson 1998).

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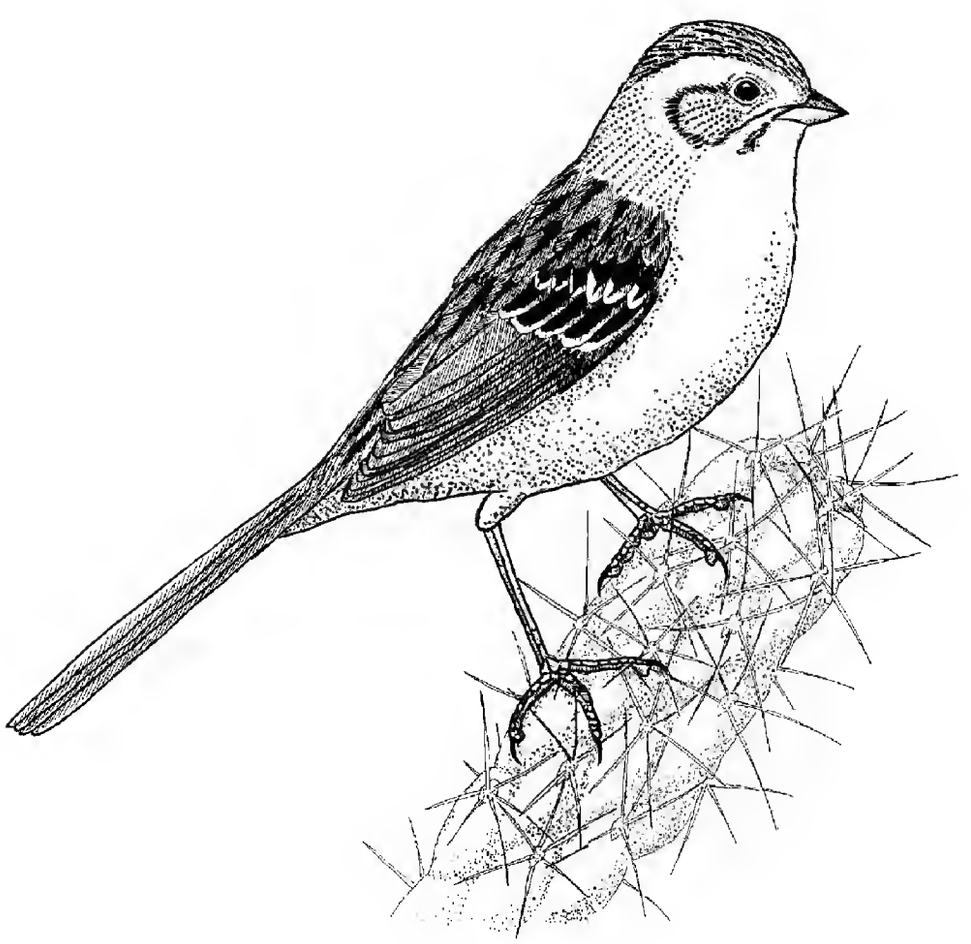

Brewer's Sparrow

Sketch by George C. West

INTERMEDIATE EGRET (*EGRETTA INTERMEDIA*) IN THE ALEUTIAN ISLANDS, ALASKA

STEPHAN LORENZ, Department of Biology, University of Texas at Tyler, 3900 University Blvd., Tyler, Texas 75799; slorenz@mail.com

DANIEL D. GIBSON, University of Alaska Museum, 907 Yukon Drive, Fairbanks, Alaska 99775; fnddg@uaf.edu

The western Aleutian Islands, Alaska, are well known for the occurrence of migrant birds from Asia (Gibson and Byrd 2007). In addition to many Asiatic waterfowl, shorebirds, and passerines, no fewer than six taxa of Asiatic herons have occurred there. Of these herons, the Yellow Bittern (*Ixobrychus sinensis*), Chinese Egret (*Egretta eulophotes*), Little Egret (*Egretta g. garzetta*), and Asiatic subspecies of the Cattle Egret (*Bubulcus ibis coromandus*) are known from a single record each, while the Indo-Pacific subspecies of the Great Egret (*Ardea alba modesta*) and Old World subspecies of the Black-crowned Night-Heron (*Nycticorax n. nycticorax*) are both known from multiple occurrences (Gibson and Byrd 2007). To this impressive list can now be added the Intermediate Egret (*Egretta i. intermedia*).

Since the 1970s field biologists have studied nesting seabirds (Procellariidae, Hydrobatidae, Phalacrocoracidae, Laridae, Alcidae) at Buldir Island (see Byrd and Day 1986), the easternmost of the western Aleutians (at 52° 21′ N, 175° 56′ E) and the most isolated island in the Aleutian archipelago. During the first weeks following the arrival of the summer 2006 field party, Lorenz and other biologists discovered the carcasses of a total of seven herons—on 25 May an adult Great Egret and an adult Black-crowned Night-Heron, on 28 May a second adult Great Egret, on 30 May an adult Intermediate Egret, and on 7 June three more adult Black-crowned Night-Herons. The first Great Egret found was estimated to have been dead about a week when discovered, and we suspect that all seven herons arrived on the passage of a single storm from the west—like many aggregations of birds in prior seasons, at Buldir and elsewhere in the Aleutians.

All seven specimens are on deposit at the University of Alaska Museum (UAM), where they were prepared, variously, in response to individual decomposition, as study skin, study skin/partial skeleton, or spread wing/skeleton; frozen genetic samples were taken from each. There was no report of a heron elsewhere in the Aleutians in spring 2006.

The Intermediate Egret, an adult male in nuptial plumage (Figure 1), was so identified in the field, where skinned, sexed, and salted. The specimen was ultimately prepared (UAM 22603) as a study skin with accompanying frozen genetic samples. Its measurements included wing (chord) 304, tarsus 114.2, and bill 74.1 mm. For comparison, published measurements (means in parentheses) for *Ardea alba modesta* (10 males) are wing 340–380 (366.4), tarsus 135–167 (153.8), and bill 98–125 (112) mm (Vaurie 1965); for *Egretta i. intermedia* (sexes combined) wing of 13 specimens 275–327 (299), tarsus of 7 specimens 93–111 (106), and bill of 14 specimens 66–76 (72.8) mm (Cramp and Simmons 1977); and for *Bubulcus ibis coromandus* (10 males) wing 243–260 (253.8), tarsus 80–91 (85), and bill 66–77 (71.1) mm (Vaurie 1965). Our specimen is identified as *Egretta intermedia intermedia* by measurements, long nuptial plumes on the chest and back, all-dark legs and feet, and gape extending to beneath, and not beyond, the orbit. Nominate *intermedia* (including *plumifera*) is the race found throughout the range of the species, except for sub-Saharan Africa (Dickinson 2003); it occurs widely in eastern and southern Asia from Japan, China, and India east through the Philippines and Indonesia to Australia; the northern populations are migratory (Vaurie 1965). As its name suggests, the Intermediate Egret is of a size between that of the larger Great

Figure 1. Intermediate Egret (*Egretta intermedia*) as found 30 May 2006 on Buldir Island, Alaska.

Egret and the smaller Little and Cattle egrets. Its proportions and overall size, luxuriant white nuptial plumes on breast and back, dark legs and feet, and sharply pointed dark-tipped yellow bill all help to identify it. No heron of North American origin is known from the Aleutian Islands.

Because of the uncertain provenance of a unique British Columbia specimen (see Macoun and Macoun 1909, Brooks 1923, Kermode 1923a, b, Munro and Cowan 1947, Godfrey 1986, Campbell et al. 1990), the Intermediate Egret has been maintained for many years by the American Ornithologists' Union (1931 et seq.) as of hypothetical occurrence in North America. The species resurfaced recently in AOU-area literature when a heron in nonbreeding plumage photographed at Midway Atoll, Hawaii, was identified as *E. intermedia* (Richardson 1999); that bird is now thought to have been instead a Cattle Egret (*B. i. coromandus*; Banks et al. 2004).

For their reviews of the manuscript, with important suggestions for improvement, we thank Richard C. Banks and Kathy C. Molina.

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BOOK REVIEWS

Biodiversity, Ecosystems, and Conservation in Northern Mexico, edited by Jean-Luc E. Cartron, Gerardo Ceballos, and Richard S. Felger. 2005. Oxford University Press. 514 pages. Hardback, $99.50. ISBN13: 978-0-19-515672-0, ISBN10: 0-19-515672-2.

Mexico is blessed with an amazing biological heritage. It has been identified as one of 17 megadiversity countries in the world, owing largely to a high degree of endemism. It has one of the highest species counts of vascular plants and amphibians; it hosts 12% of the world's mammal species and over 1000 bird species. And these riches are not limited to the country's tropical southern regions: more species of reptiles are said to occur in Mexico than in any other country, thanks largely to the diversity of arid habitats found in northern Mexico; the Baja California peninsula has the highest known density of scorpion species in the world; the state of San Luis Potosí has the highest known concentration of cactus species. Facts like these are presented in this welcome volume and serve as the backdrop for further discussions regarding the conservation of these threatened resources.

Eighty-two authors, the majority Mexican, combined to prepare 23 chapters presented in three sections: Historical, Geographic, and Legal Setting (4 chapters); Patterns of Species Diversity and Ecological Importance of Natural Ecosystems (12 chapters); and Natural Resource Impacts and Conservation at a Population, Species, and Landscape Level (7 chapters). Chapters address terrestrial, marine, and freshwater species, geology, human history, and environmental laws of the region. I appreciated learning of underlying factors (e.g., geology, oceanography) that help determine the distribution of birds and other organisms.

Five chapters cover all of northern Mexico, while the Baja California peninsula (5 chapters) and Chihuahuan Desert (4 chapters) are the regions covered best. As for taxonomic groups, birds receive the most coverage, with five chapters. Six chapters cover all biota, with additional ones emphasizing mangroves and marine invertebrates. There are chapters on plants (4), mammals (3), herptiles (2), and scorpions and freshwater fish (1 each).

Bird chapters address hummingbird communities in Sonora, arroyo and oasis bird communities in Baja California Sur, the effects on raptors and ravens of concrete power poles in northwestern Chihuahua, grassland birds in the Chihuahuan Desert, and nesting seabirds in the Gulf of California (defined here and elsewhere in the book as extending south to Cabo Corrientes, Jalisco). I believe the seabird summary by Velarde et al. is one of the strongest chapters in the book, while the power-pole chapter was narrower in scope than the others and seemed a little out of place.

Unfortunately, the arroyo and oasis chapter contains a number of obvious errors. Some may argue that occasional incorrect species identifications are insignificant when larger ecological matters are considered, but insufficient care was taken in reporting the following species from Baja California Sur: the Striated Heron (*Butorides striatus*), Yellow-bellied Sapsucker, Northern Flicker, Blue-headed Vireo, and Canyon Towhee. While each of these can be explained away by noting that the congener common in the area was not listed, the same cannot be said of the reported Gray Hawk and Buff-breasted Flycatcher. It is likely that other species such as Hammond's and Dusky Flycatchers were also misidentified. Species that may have been correctly identified but are misreported as "known to nest...in Baja California Sur" include the Zone-tailed Hawk, Black-chinned Hummingbird, Belted Kingfisher, Marsh Wren, Lark Bunting, Western Meadowlark, and Brown-headed Cowbird. The last two species were first confirmed nesting in the state only in 2006. As has been done previously, it is reported (p. 347) that "the oasis at Santiago no longer exists" and that the endemic Belding's Yellowthroat (*Geothlypis beldingi*) no longer occurs there. Yet the species

has been seen regularly at Santiago since 2000, with a maximum of 21 recorded on 19 January 2004 (*N. Am. Birds* 58:287).

The chapter on mangroves in Baja California Sur includes a table of bird use that also has a number of errors and omissions, although they are generally minor. The record of the Virginia Rail nesting at La Paz has rightly been questioned previously (*Am. Birding Assoc. Monogr. Field Ornithol.* 3:192). I did not discern any misidentification problems elsewhere in the book, although my expertise quickly fades away from the Baja California peninsula and among taxa other than birds.

Chapters I found especially well done or interesting focused on northwestern Mexico: *Macrofaunal diversity in the Gulf of California* by Brusca et al., *Cetacean diversity and conservation in the Gulf of California* by Urbán R. et al., *Baja California's enduring Mediterranean vegetation: Early accounts, human impacts, and conservation status* by Minnich and Franco-V., and *Sea turtles in northwestern Mexico: Conservation, ethnobiology, and desperation* by Felger et al.

I learned the following from these and other chapters: It is estimated that more than half of the species of marine invertebrates in the Gulf of California have not been described. The most recent population estimate for the Vaquita (*Phocoena sinus*), the smallest marine cetacean and endemic to the northern gulf, is 567. Another gulf endemic, the fishing bat *Myotis vivesi*, numbers 12,000 to 15,000 on Isla Partida in the northern gulf. A mandible of a mouse opossum (*Marmosa* sp.) was found in a Barn Owl pellet at San Ignacio, Baja California Sur. It is assumed that the mandible belonged to a Gray Mouse Opossum (*M. canescens*) but, just as bird-records committees debate some records, mammalogists debate the natural occurrence of that individual. "Mouse opossums frequently have been discovered in loads of fruit" (Gardner, A. L., and Cortés-Calva, P. 1999. Didelphidae, pp. 29–37 in *Mamíferos del Noroeste de México*. Alvarez-Castañeda, S. T., and Patton, J. L. eds., Centro de Investigaciones Biológicas del Noroeste, S. C., La Paz, Baja California Sur.). The largest extant prairie dog (*Cynomys*) town known in North America was discovered in northwestern Chihuahua in 1987; American Bison (*Bison bison*) still roam there, and Black-footed Ferrets (*Mustela nigripes*) were reintroduced in 2001.

Recurring themes in the book include the acceleration of threats from rapid human population growth and attendant development, water diversions (especially on the lower Colorado River), exotic species, overfishing and associated disturbance, and agriculture. The editors also lament the lack of enforcement of existing laws such as those regarding sea turtles. But they also highlight the growing number of conservation organizations and universities engaged in conservation in Mexico since about 1990 and the amount of land set aside in protected areas. They present specific recommendations to consolidate and enhance the value of protected areas on both sides of the international border. Various authors point out regions or topics in need of further research.

A larger, rather similar eclectic collection of papers appeared in 1993 (Ramamoorthy, T. P., Bye, R., Lot, A., and Fa, J. *Biological Diversity of Mexico: Origins and Distribution*. Oxford Univ. Press, Oxford, England.). It was followed quickly by a more systematic summary—state-by-state and taxon-by-taxon—by O. Flores Villela and P. Gerez (1994. *Biodiversidad y Conservación en México: Vertebrados, vegetación y uso del suelo*. CONABIO and UNAM, México, D.F.). Another large collection of papers focusing on the Sonoran Desert, but covering a wider range of subject matter, just appeared (Felger, R. S., and Broyles, B., eds. 2007. *Dry Borders: Great Natural Reserves of the Sonoran Desert*. Univ. Utah Press, Salt Lake City.). It is heartening to see the arrival of these works along with others such as those by H. Gómez de Silva and A. Oliveras de Ita (eds. 2003. *Conservación de Aves: Experiencias en México*. CIPAMEX, México, D.F.) and G. Ceballos and L. Márquez Valdelamar (eds. 2000. *Las Aves de México en Peligro de Extinción*. Instituto de Ecología, UNAM, Mexico, D.F.).

Biodiversity, Ecosystems, and Conservation in Northern Mexico was generally well edited, and I found very few typos, although in several chapters I sorely missed a useful abstract, summary, or conclusion. The index appears complete and useful. While I encourage you to seek out this book and examine its contents (every serious library should have a copy), probably only a limited number of readers of *Western Birds* will need to add it to their permanent collections.

Richard A. Erickson

Birds of Lane County, Oregon, edited by Alan L. Contreras. 2006. Oregon State University Press. 366 pages. 130 black-and-white photos, illustrations, and figures. Paperback, $20.00. (ISBN 0-87071-180-6).

The size of Delaware, Rhode Island, and 26 Districts of Columbia combined, Lane County is Oregon's sixth largest county. Stretching from the crest of the Cascades across the farmlands and wetlands of the Willamette Valley and over the Coast Range to the Pacific, its topographical diversity gives it more bird species (403 recorded) than any other county in the state.

Birds of Lane County, Oregon, is both a birding guide and a comprehensive treatment of the status and distribution of the county's avifauna. The first half of the book surveys 100 birding locations with site guides authored by 12 contributors. The second half consists of species accounts authored by the book's editor, Alan Contreras.

This volume offers much of interest for Oregon birders and field ornithologists, as suggested by its brisk early sales. Readers from outside Oregon may find it useful for two reasons. First, because Lane County is a representative microcosm of the Pacific Northwest, the book is instructive for understanding this region's habitats and avifauna. Second, the book serves as an outstanding model for a county bird book—a genre of which I expect we will see more and more in the years ahead.

After introducing Lane County's physical geography, the book takes us on a tour through its 100 featured sites. This survey is organized by region across 12 chapters, with the Eugene–Springfield metro area receiving more detailed attention than do the less populated outlying regions. The site guides are straightforward, readable, informative, and follow a style similar to that of the ABA bird-finding series. Maps, well executed by Kit Larsen, superimpose roads and locations of interest over topographical backgrounds and provide an appropriate level of detail. For each site, icons relate the quality of birding by season, the availability of handicapped access, and (for coastal sites) the best tides at which to visit. For all these reasons, *Birds of Lane County* will prove valuable for the visiting birder.

Following the site guides come the 403 species accounts. Each account focuses on status and distribution within the county—a wise choice in prioritizing space, since the biology and broader status of Oregon's birds were so admirably covered in *Birds of Oregon: A General Reference* (reviewed in *Western Birds* 34:178–181, 2003). Contreras, an editor of that tome, has gone to impressive lengths to uncover occurrences of birds from old and obscure literature and from the field notes and dimming memories of the living. As a result, *Birds of Lane County* boasts considerable scientific merit in establishing an accurate and comprehensive historical record.

The species accounts also showcase Contreras's skill at communicating the essence of a bird's status and distribution accurately and insightfully within a concise format. The editor is an accomplished (and published) poet, and although he keeps his prose terse and pragmatic in this volume, his economy and efficacy with words are apparent.

The text is leavened with attractive and lifelike illustrations drawn by Barbara Gleason. It also features numerous photographs of rarities and other species of interest, although in my copy some photos are printed too dark and others do not show up well in black and white. For selected species, graphs portray data on seasonality,

population trends, or abundance among Christmas Bird Count (CBC) circles.

In the book's final pages, Contreras presents a concise history of ornithological work conducted in the county, as well as profiles of the book's contributors, contact information for organizations and agencies, and a checklist, species index, glossary of place names, and reference list. Also included are average spring arrival dates from 1994 to 2004 for 50 species, compiled by Tom Mickel. Contreras follows this with checklists to encourage readers to keep their own records for spring and fall arrivals and departures. This appealing feature makes clear that the building of knowledge about a local avifauna is a community exercise, and it welcomes the newcomer to participate.

Although the diversity of items that *Birds of Lane County* offers is one of its strengths, it also frequently leaves the reader desiring more depth. The concise, factual style of both the site guides and the species accounts leaves little room for interpretive discussion. As a result, the reader interested in reasons behind the patterns sometimes ends up with more questions than answers.

For instance, conservation and management efforts that have influenced the status and distribution of birds in the county could have been given more attention. In particular, restoration and management initiatives at Fern Ridge Reservoir have helped drive population trends of certain species within the county (e.g., shorebirds, breeding ducks), and readers may want to understand the roles that habitat improvements have played at this important location.

This volume also could have benefited from a wider and more systematic use of data-rich graphics. Bar charts of seasonal abundance are such a wonderful tool, distilling a great deal of information intuitively into a concise space, so it is unfortunate that these were not used. No figures synthesize data from Breeding Bird Survey routes or from the *Oregon Breeding Bird Atlas* (reviewed in *Western Birds* 33:125–127, 2002). Moreover, the graphical depictions included are not always explicitly integrated with the text. For example, a graph of White-breasted Nuthatch numbers from the Eugene CBC since 1942 shows an increase and then a decline. The text correctly tells us that this species relies on stands of mature oaks but does not link this to the population trends shown. Another graph shows the unexplained variation in CBC numbers of the Red-breasted Sapsucker but leaves one to wonder why other species with considerable year-to-year variation (such as the Pine Siskin) are not similarly graphed.

Overall, an enhanced use of graphical summaries might have made this volume more engaging and scientifically valuable, but this is a secondary concern. As a guide for residents and visitors, as a historical record of the birds of the county, and as a model for a county bird book, *Birds of Lane County* succeeds admirably.

Jay Withgott

FEATURED PHOTO

LEUCISTIC GREBE AT MONO LAKE — AN IDENTIFICATION CHALLENGE

LEN BLUMIN, 382 Throckmorton Ave., Mill Valley, California 94941; LBlumin@aol.com

From 12 to 15 October 2006 I observed and photographed a fully leucistic *Podiceps* grebe on Mono Lake, California. Subsequent study of the photographs raised questions about which species I had been watching and led to a review of how best to differentiate white-plumaged grebes.

Mono Lake hosts more than 1.5 million Eared Grebes (*Podiceps nigricollis*) in October when most molt into basic plumage (Boyd and Jehl 1998). The grebes gorge on superabundant Mono Lake Alkali Flies (*Ephydra hians*) and Mono Lake Brine Shrimp (*Artemia monica*) before heading farther south for the winter (Cullen 1999). Within minutes of our arrival at Mono County Park in the mid-afternoon of 12 October 2006 Patti Blumin, my wife, spotted a white grebe, and we watched it for the next 30 minutes as it foraged at the surface and occasionally dove. The bird's behavior differed from that of the neighboring Eared Grebes; it dived more frequently and occasionally swam like a merganser with just its head below the surface. We relocated and photographed the leucistic grebe on 14 and 15 October, and we later learned it had been spotted earlier by Jim Dunn on 7 October.

Upon processing the digital photos, which I had taken at 30× magnification through a spotting scope, I quickly realized the bird's structure was not typical of the Eared Grebe, showing instead many features of the Horned Grebe (*P. auritus*) described by Stedman (2000). The bill looked thick and straight, with the culmen tapering down at the tip, rather than straight and flat as in the Eared Grebe. The forehead had a shallow slope, leading into a flat crown that peaked well behind the eye. The neck looked thicker and perhaps shorter than the necks of nearby Eared Grebes. I selected the best photo (featured on this issue's back cover) and posted it on the Internet with a request for help in identification. In addition, I sent the photo and another (Figure 1) to 21 scientists and friends with far greater experience in such matters.

Not entirely to my surprise, 15 of the 21 reviewers opined, largely on the basis of bill and head shape, that the leucistic grebe resembled in many respects a Horned Grebe. Such an occurrence would appear unlikely. Horned Grebes moving south in California hug the coast, preferring salt water for foraging (Stedman 2000). They are seen less frequently inland in California and rarely at Mono Lake (Gaines 1992). Leucism is rare but regular in the Eared Grebe, occurring in about one in every 75,000 to 80,000 birds in October at Mono Lake (Jehl 1985). Leucism may be even rarer in the Horned Grebe, with scant reports appearing in the literature over the past century (Weller 1959). Stedman's (2000) detailed monograph on the Horned Grebe does not mention aberrant plumages. Thus, if the white grebe shown here were a Horned Grebe, it would be a distinctly rare sighting, especially at this inland locality.

Kaufman (1992) provided guidance for discriminating between Eared and Horned grebes with aberrant plumage. He discounted somewhat the value of bill shape as a discriminating factor, stating, "unfortunately, the difference in bill shape between the two species is subtle, and partly bridged by variation in both species." He also devalued the use of neck thickness and fluffed hindquarters as helpful, again because of overlap between the species and the fact that apparent neck thickness can change easily with different postures or activities. Kaufmann emphasized the differences in head shape and provided instructive drawings.

Although shape of the white bird's head in the featured photos suggests a Horned

Figure 1. Leucistic grebe at Mono Lake, October 2006.

Photo by Len Blumin

Grebe, I do not believe the bird can be conclusively identified as that species. Figure 2 shows an Eared Grebe with a steep forehead and peak over the eye. Figure 3 shows a similar Eared Grebe actively pursuing prey, showing a less steep forehead and a shift of the peak toward the rear of the head, similar to the profile of the leucistic grebe. In Figure 2 we see a typical Eared Grebe bill, with a flat culmen and upturned tip of the mandible. In Figures 4 and 5 we see Eared Grebes with bills that appear straighter, due to a downcurve of the tip of the culmen, not unlike the bill of the leucistic grebe featured on the back cover.

Although experienced birders viewing the photos opted for the Horned Grebe over the Eared by about a 3:1 margin, consider for a moment how probability favors the Eared Grebe. If we take bill shape first, we learn from Kaufman (1992) and Cullen (1999) that some Eared Grebes have bills that appear straight. Even if only 5% of Eared Grebes have straight bills (Figures 4 and 5), that's still 75,000 or more such birds at Mono Lake in October. Second, judging head shape is subjective, especially when a distinct "peak" is lacking. When an Eared Grebe sleeks its feathers down before a dive it can appear a lot like a Horned, as shown by Kaufman (1992) and by the lunging bird in Figure 3. Six of 21 reviewers of the leucistic grebe judged its head shape to indicate the Eared, suggesting we can't use head shape as a clear discriminator. I conclude that at Mono Lake in early October finding a leucistic Eared Grebe with some features suggesting the Horned Grebe is far more likely than finding a leucistic Horned Grebe. Finally, the bird did not show one unequivocal Horned Grebe feature, a pale or white tip to the bill. Lacking this key feature, I think we are left with a probable Eared Grebe, showing again that field identification sometimes leaves us with an irresolvable degree of uncertainty.

Figure 2. Eared Grebe, showing typical bill with flat culmen, steep forehead, and peak of the crown over the eye.

Photo by Len Blumin

Figure 3. Eared Grebe lunging forward, with more shallowly sloped forehead and the peak of the crown shifted toward the back of the head.

Photo by Len Blumin

Figure 4. Eared Grebe whose head lacks a distinct peak and whose culmen tapers downward at the tip. Compare to shape of bill in Figures 1 and 3 and on back cover.

Photo by Len Blumin

Figure 5. Eared Grebe with steep forehead and culmen tapering at tip. Compare to shape of bill Figures 1 and 3 and on back cover.

Photo by Len Blumin

Photographs can be invaluable in documenting rare sightings, but there is a risk of selection bias in the choice of photos, an error that concerned me when I chose the two photos featured here. Small changes in the angle at which the head is viewed can greatly influence the apparent shape of the head and bill. Other less sharp photos I took (not shown) sometimes showed a steeper forehead and/or thinner bill, but all showed a compact bird with a somewhat thick neck. Photos of the same bird taken by others on 13 and 15 October, such as those taken by Ron Wolf, depict a bird with a head shape more typical of an Eared Grebe's.

I have followed Buckley (1969) in referring to birds with white feathers and normally pigmented bare parts as "leucistic." Others such as Jehl (1985), Collins (2003), and van Grouw (2006) have followed the lead of Buckley in choosing leucism/leucistic over terms such as albinism/albinistic, albino, partial or incomplete albino, etc.

Thanks to Joe Morlan for providing reference materials and motivation, to Stephen Stedman, Jeff Davis, and Kimball Garrett for reviewing the manuscript and providing invaluable comments, and to the many birding enthusiasts and scientists who took the time to review the photos and offer their opinions.

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Photo by © Larry Sansone of Los Angeles, California:
Snowy Owl (*Bubo scandiacus*)
Grizzly Bay, Solano County, California, 22 January 2007.

Back cover "Featured Photo" by © Len Blumin of Mill Valley, California: Leucistic grebe (*Podiceps sp.*), Mono Lake, Mono County, California, 14 October 2006.

WESTERN BIRDS

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Front cover photo by © Kenneth Z. Kurland of El Centro, California: Ross's Gull (*Rhodostethia rosea*), Red Hill, Imperial County, California, 18 November 2006.

Western Specialty:
Flammulated Owl

Photo by © Lance Benner of Altadena, California:
Flammulated Owl (*Otus flammeolus*)
San Gabriel Mountains, Los Angeles County, California, August 2005

WESTERN BIRDS

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THE 31ST REPORT OF THE CALIFORNIA BIRD RECORDS COMMITTEE: 2005 RECORDS

MARSHALL J. ILIFF, 282 Perham St., West Roxbury, Massachusetts 02132; miliff@aol.com

GUY McCASKIE, 954 Grove Ave., Imperial Beach, California 91932; guymcc@pacbell.net

MATTHEW T. HEINDEL, 2837 Corte Papaya, Carlsbad, California 92009; mtheindel@aol.com

ABSTRACT: The California Bird Records Committee reached decisions on 242 records involving 91 species and one species pair evaluated during 2005, endorsing 182. New to California were Parkinson's Petrel (*Procellaria parkinsoni*), Ringed Storm-Petrel (*Oceanodroma hornbyi*), Slaty-backed Gull (*Larus schistisagus*), and Green Violet-ear (*Colibri thalassinus*). Adjusted for these additions, California's bird list stands at 632 species, ten of which are nonnative. A Falcated Duck from 1969 (*Anas falcata*) and a Glossy Ibis (*Plegadis falcinellus*) accepted from May 2000 predate previous records and thus become the state's earliest of those species.

This 31st report of the California Bird Records Committee (hereafter the CBRC or the committee) details the evaluation of 242 records of 91 species and an additional species pair. Although most records pertain to birds found in 2005, the period covered by this report spans the years from 1891 through 2005. The committee accepted 197 records involving 284 individuals of 78 species and one species pair, for an acceptance rate of 79.7%. Forty-five records of 33 species were not accepted because of insufficient documentation or because descriptions were inconsistent with known identification criteria. Four additional records of four species were not accepted because of questions concerning the birds' natural occurrence. Counties best represented by accepted records were Imperial (24 records), Los Angeles (20), Santa Barbara (17), Humboldt (15), San Diego (13), San Francisco (13 records, 11 of which were from Southeast Farallon I.), Monterey (10), Marin (10), Kern (9), and Inyo (8). The acceptance of 11 historical records of 101 individual Roseate Spoonbills (*Platalea ajaja*) affects some statistical data in this report, notably the county totals above, as nine of those records hail from Imperial County.

Highlights of this report include California's first Parkinson's Petrel (*Procellaria parkinsoni*) and Ringed Storm-Petrel (*Oceanodroma hornbyi*), both of which are new for the United States as well. The Slaty-backed Gull (*Larus schistisagus*) is also new to the California list, with six different individuals accepted in this report. The Green Violet-ear (*Colibri thalassinus*) is also added to the state list because of reassessment of a record from 1977. A 1969 Falcated Duck (*Anas falcata*) and a May 2000 Glossy Ibis (*Plegadis falcinellus*) predate other accepted records and thus become the state's earliest. Potential first state records of the Barnacle Goose (*Branta leucopsis*) and Common Chaffinch (*Fringilla coelebs*) were not accepted on grounds of questionable natural occurrence, and reports of Solander's Petrel (*Pterodroma solandri*) and Brown-capped Rosy-Finch (*Leucosticte australis*), also potential state firsts, were not accepted because of inadequately supported identifications. Four Galapagos/Hawaiian Petrels (*Pterodroma phaeopygia/sandwichensis*), five Red-tailed Tropicbirds (*Phaethon rubricauda*), four Yellow-crowned Night-Herons (*Nyctanassa violacea*), five Broad-billed Hummingbirds (*Cynanthus latirostris*), an amazing eleven Dusky-capped Flycatchers (*Myiarchus tuberculifer*), three Wood Thrushes (*Hylocichla mustelina*), and six Red-faced Warblers (*Cardellina rubrifrons*) in 2005 represented numbers unusually high for those species. Other especially notable birds reported here include California's sixth Baikal Teal (*Anas formosa*), fourth Common Black-Hawk (*Buteogallus anthracinus*), first June Red-necked Stint (*Calidris ruficollis*), third Iceland Gull (*Larus glaucoides*), third Chuck-will's-widow (*Caprimulgus carolinensis*), first summering Greater Pewee (*Contopus pertinax*), fourth Arctic Warbler (*Phylloscopus borealis*), second mid-summer Field Sparrow (*Spizella pusilla*), and a winter Pyrrhuloxia (*Cardinalis sinuatus*) from Orange County. The committee also completed a retrospective review of records of the Roseate Spoonbill (*Platalea ajaja*), reviewing 34 records of more than 160 individuals and accepting 11 records involving 101 individuals. Accepted first state records of Ross's Gull (*Rhodostethia rosea*) and the Taiga Flycatcher (*Ficedula albicilla*) will be discussed in the 2006 report.

In 2006 the American Ornithologists' Union checklist committee split the Blue Grouse into the Dusky Grouse (*Dendragapus obscurus*) and the Sooty Grouse (*D. fuliginosus*) (Banks et al. 2006). The Dusky occurs in the intermontane West and ranges west to eastern Washington, eastern Nevada, and northern Arizona, while the Sooty Grouse occurs nearer the Pacific coast and is the species found in California. The Sooty Grouse thus replaces the Blue Grouse on the California list.

The list of species reviewed by the CBRC is posted at the Western Field Ornithologists' web site (http://www.wfo-cbrc.org). This site also includes the entire California state list, the committee's bylaws, a reporting form for the direct e-mail submission of records to the CBRC, the addresses of current committee members, a photo gallery of recent submissions, including several birds published in this report, and other information about the CBRC, WFO, and its journal, *Western Birds*.

All documentation reviewed by the CBRC, including copies of descriptions, photographs, videotapes, audio recordings, and committee members' comments on records submitted are archived at the Western Foundation of

Vertebrate Zoology, 439 Calle San Pablo, Camarillo, California 93012, and are available for public review. The CBRC solicits and encourages observers to submit documentation for all species on the review list, as well as species unrecorded in California. Documentation should be sent to Guy McCaskie, CBRC secretary, P. O. Box 275, Imperial Beach, CA 91933-0275 (e-mail: guymcc@pacbell.net).

NEWS AND FORMAT

Committee News. The committee's voting membership after the January 2007 annual meeting consisted of David M. Compton, Kimball L. Garrett, Alvaro Jaramillo, Joseph Morlan (vice chair), Kristie N. Nelson, James E. Pike, Peter Pyle, Daniel S. Singer (chair), and Scott B. Terrill. Guy McCaskie continued in his role as nonvoting secretary. Additional committee members who also voted on many of the records in this report include Luke W. Cole, Jon L. Dunn, Matthew T. Heindel, Marshall J. Iliff, Todd McGrath, Michael M. Rogers, Mike San Miguel, and John C. Sterling.

At the 2007 meeting the committee revisited the issue of field-identifiable subspecies, discussed previously by Erickson and Terrill (1996). While the committee unanimously agreed not to review subspecies formally, it is interested in continuing to archive reports of subspecies rare in California. California birders show increased interest in reporting taxa below the species level, reaffirming for the committee that archiving such reports is essential for understanding the distribution and abundance of California birds; this archive would facilitate review in the event of future splits. Obviously the level of detail required in the documentation of birds on the list below is quite high, and the problems posed by introgression are in some cases intractable, so extensive photographs, field descriptions and sketches, recordings of vocalizations, and (in some cases) a specimen are essential. Erickson and Terrill (1996) presented a list of field-identifiable or possibly field-identifiable subspecies reported in California for which the committee would like to archive records. In 2007 the committee added the Vega Herring Gull (*Larus argentatus vegae*) and Eastern Red-shouldered Hawk (*Buteo lineatus lineatus*), on the basis of recent reports (*N. Am. Birds* 59:321 and Pyle et al. 2004, respectively); records of the former are of particular interest to the committee. The current list includes the following subspecies, reported from California and meeting review-list criteria:

Atlantic, Light-bellied, or American Brant (*Branta bernicla hrota*), including "Gray-bellied" Brant (Buckley and Mitra 2002, Mlodinow and Axelson 2006)
Bewick's Tundra Swan (*Cygnus columbianus bewickii*)
Eastern or Northern Red-shouldered Hawk (*Buteo lineatus lineatus*)
Eurasian Whimbrel (*Numenius phaeopus variegatus/phaeopus*)
Vega Herring Gull (*Larus argentatus vegae*)
Eastern/Texas Bell's Vireo (*Vireo bellii bellii/medius*)
Eastern Winter Wren (*Troglodytes troglodytes hiemalis*)
Eastern Hermit Thrush (*Catharus guttatus faxoni/euborius*)
Siberian American Pipit (*Anthus rubescens japonicus*)
Yellow Palm Warbler (*Dendroica palmarum hypochrysea*)

White-winged Dark-eyed Junco (*Junco hyemalis aikeni*)
Eastern Purple Finch (*Carpodacus purpureus purpureus*)

The Siberian Common Tern (*Sterna hirundo longipennis*) had been included by Erickson and Terrill (1996), but the committee unanimously voted to remove that subspecies from the list given that we are aware of no confirmed reports (i.e., photographs, specimens, etc.) of it from the west coast south of Alaska; one in New Jersey (*N. Am. Birds* 57:473, 573) is apparently the only one reported in North America away from western Alaska. Certain other rare field-identifiable subspecies or forms, such as the Eurasian Green-winged or Common Teal (*Anas crecca crecca*) and the Eastern, Yukon, or Red Fox Sparrow (*Passerculus iliaca zaboria/iliaca*) do not meet the review-list threshold of fewer than four records per year. Note that many other subspecies of birds on the California list occur as vagrants but at this point are not yet considered by the CBRC—mainly because they are not readily identified in the field and reports are not being generated by the birding community; an example is the eastern subspecies of the Brown Creeper (*Certhia americana americana*). The committee is interested in archiving information on any additional subspecies previously unknown from California, but any formal review in the future may be limited to those that are split as species or at least to those that are considered field-identifiable. This list is evolving and is sure to undergo revision at subsequent CBRC meetings.

As pointed out by Shuford (2006), *California Birds/Western Birds* is now available online via SORA, the Searchable Ornithological Research Archives, at http://elibrary.unm.edu/sora, currently through 2004. All 31 reports of the CBRC, beginning in 1973, have been published in *California Birds/Western Birds*, with at least one report annually since 1990. All journals on the site are searchable, and articles have been scanned individually as PDF or DJVU files; Shuford (2006) gives recommendations on how best to use the site. The CBRC thanks the University of New Mexico for hosting the site and WFO for fundraising that made the inclusion of *California Birds/Western Birds* possible. SORA has become one of the most valuable websites for the active field ornithologist in North America and also includes other prominent journals such as *Auk*, *Condor*, *Journal of Field Ornithology*, *North American Bird Bander*, *Ornithological Monographs*, *Ornitología Neotropical*, *Pacific Coast Avifauna*, and *Wilson Bulletin*.

Format and Abbreviations. As in other recent CBRC reports, records are generally listed chronologically by first date of occurrence and/or geographically, from north to south. Included with each record is the location, county abbreviation (see below), and date span. The date span usually follows that published in *North American Birds* (formerly *American Birds* and *Field Notes*), but, if the CBRC accepts a date span that differs from a published source, the differing dates are italicized. Initials of the observer(s) responsible for finding and/or identifying the bird(s)—if known and if they supplied supportive documentation—are followed by a semicolon, then the initials, in alphabetized order by surname, of additional observers submitting supportive documentation, then the CBRC record number consisting of the year of submission and a chronological number assigned by the secretary. All records are sight records unless otherwise indicated: initials followed

by a dagger (†) indicate the observer supplied a supportive photograph, (‡) indicates videotape, (§) indicates a voice recording, and (#) indicates a specimen record, followed by the acronym (see below) of the institution housing the specimen and that institution's specimen catalog number. An asterisk (*) prior to a species' name indicates that the species is no longer on the CBRC's review list.

During 2003, in preparation for the publication of *Rare Birds of California*, the committee changed the way it reports records and individuals, a change in the committee's tradition that brings its reporting into conformity with its bylaws. In this report, the first number in parentheses after the species' name is the number of *individual birds* accepted by the CBRC through this report, not the number of accepted *records*; the number of individual birds may be higher than the number of records as historically the committee has treated groups of individuals appearing together with a single record number (e.g., a flock of Common Redpolls, *Carduelis flammea*). The second number is the number of new individuals accepted in this report (because this number excludes records thought to pertain to returning individuals treated in previous reports, it may be zero). Two asterisks (**) after the species' total indicate that the number of accepted records refers only to a restricted review period or includes records accepted for statistical purposes only; see Roberson (1986) for more information.

When individual birds return to a location after a lengthy or seasonal absence, each occurrence is reviewed under a separate record number, and committee members indicate whether or not they believe the bird is the same as one accepted previously. Such decisions follow the opinion of the majority of members, and, if a bird is considered a returning individual, the total number of individuals remains unchanged.

Although the CBRC does not formally review the age, sex, or subspecies of each bird, information on these subjects is often provided during the review process (and in some cases a strong majority or consensus is achieved). We report much of this information; the diagnosis of age, sex, or subspecies is the authors' opinion based on the evidence in the files and committee members' comments. Our terminology for age follows the calendar-based terminology devised by the U.S.Geological Survey's Bird Banding Laboratory and detailed by Pyle (1997); see Cole et al. (2006) for more information on the age terminology used in committee reports.

The CBRC uses standard abbreviations for California counties; those used in this report are ALA, Alameda; BUT, Butte; COL, Colusa; CC, Contra Costa; DN, Del Norte; GLE, Glenn; HUM, Humboldt; IMP, Imperial; INY, Inyo; KER, Kern; KIN, Kings; LAK, Lake; LAS, Lassen; LA, Los Angeles; MRN, Marin; MEN, Mendocino; MNO, Mono; MTY, Monterey; ORA, Orange; RIV, Riverside; SAC, Sacramento; SBE, San Bernardino; SD, San Diego; SF, San Francisco; SLO, San Luis Obispo; SM, San Mateo; SBA, Santa Barbara; SCL, Santa Clara; SCZ, Santa Cruz; SHA, Shasta; SIS, Siskiyou; SOL, Solano; SON, Sonoma; STA, Stanislaus; TRI, Trinity; TUL, Tulare; VEN, Ventura; YOL, Yolo. A list of county abbreviations for all 58 California counties is available on the WFO-CBRC web site and in Langham (1991). Other abbreviations used: Cr., creek; I., island; L., lake; Mt., mountain; n. miles, nautical miles; N.W.R., national wildlife refuge; Pt.,

point; R., river; W.A., wildlife area; W.M.A., wildlife management area.

Museum collections housing specimens cited in this report, allowing access to committee members for research, or otherwise cited, are the Field Museum of Natural History, Chicago (FMNH); Natural History Museum of Los Angeles County, Los Angeles (LACM); Museum of Vertebrate Zoology, University of. California, Berkeley (MVZ); San Bernardino County Museum, Redlands (SBCM); San Diego Natural History Museum, San Diego (SDNHM); Western Foundation of Vertebrate Zoology, Camarillo (WFVZ); and the National Museum of Natural History at the Smithsonian Institution, Washington, D.C. (USNM).

RECORDS ACCEPTED

TRUMPETER SWAN *Cygnus buccinator* (67, 6). Three adults and three first-fall immatures were together near Durham, BUT, 23 Dec 2005–6 Feb 2006 (BED; JCS†, DWN†; 2005-214). Records for this species are increasing as is the number of individuals; whether this increase reflects increased observer effort and knowledge or reflects increasing numbers reaching California is not clear. See also records not accepted, identification not established.

FALCATED DUCK *Anas falcata* (2, 1). A male on Upper Newport Bay, ORA, 2 Jan–21 Feb 1969 (RBr†, GMcC; 1986-128A; Figure 1) becomes the first Falcated Duck accepted for California. One other record has been accepted by the committee, of a male at Honey L. W. A., LAS, 19 Mar–9 Apr 2002 and 2 Jan–11 Mar 2003 (San Miguel and McGrath 2005). The Orange County bird had previously been considered "identification established, origin uncertain" (Roberson 1993) and had previously been voted onto the supplemental list. On this second review, the Orange County

Figure 1. This adult male Falcated Duck (*Anas falcata*) at Upper Newport Bay, Orange County, January 1969 was accepted by the CBRC as a wild vagrant, after previously being considered an escapee from captivity, and so becomes the first of its species accepted for California.

Photo by Richard Bradley

record enjoyed 8–1 support on origin, with supporters pointing out the species' blossoming pattern of vagrancy in the Pacific Northwest and this bird's occurrence at a location well-known for wintering dabbling ducks, including several Eurasian Wigeons (*A. penelope*) and occasional Eurasian Green-winged Teals (*A. crecca crecca*). The lone detractor felt that the urban location and the local precedent for other escapee waterfowl, such as the Mandarin Duck (*Aix galericulata*), were strikes against this record. The species is clearly kept by a number of waterfowl collectors, and records from Maryland (Peterjohn and Davis 1996), Virginia, North Carolina, and Europe have been believed to pertain to escapees (AOU 1998).

BAIKAL TEAL *Anas formosa* (6, 1). One male, apparently in its first fall, was found at the Mission Hills sewage-treatment plant near Lompoc, SBA, 10 Dec 2005–9 Jan 2006 (WF†; AB†, DMC†, JMG†, LaH, OJ, KHL, CAM, GMcC, JM†, MSanM, DWN†, LS†, BKS†, MBS†; 2005-187) and represents the first live Baikal Teal seen by birders in California. A color photo was published in *N. Am. Birds* 60:319. The five prior records were all of birds killed by hunters 14 Oct–4 Jan in various inland counties. Like the Falcated Duck, the Baikal Teal is kept in captivity, and the question of natural occurrence was considered by some on the committee. In this instance, the bird's immaturity weighed strongly in the acceptance of this record, since an immature was thought more likely to stray to California. The winter date, skittish behavior, and lack of bands or other signs of captivity were taken into account as well. The Baikal Teal is casual in w and n Alaska and has recently appeared in Washington (*N. Am. Birds* 59:314) and Hawaii (*N. Am. Birds* 57:275). Populations in e Asia have apparently responded very well to conservation efforts (following an historical low in the 1980s), and Delaney and Scott (2002) estimated the population at about 300,000.

YELLOW-BILLED LOON *Gavia adamsii* (75, 1). One off Otter Pt. in Pacific Grove, MTY, 6 Feb–15 May 2005 (BA†, MB, DR†, DVP; 2005-056) was in an area where this species is found almost annually. Over 80% of the state's records are from Monterey County north and come from November to April. See also records not accepted, identification not established.

SHORT-TAILED ALBATROSS *Phoebastria albatrus* (16**, 4). Single immatures were at Prisoner's Harbor on Santa Cruz I., SBA, 6 Jul 2005 (JMM†, SWS†; 2005-081) and at 38.05° N, 123.28° W, near the Cordell Bank, MRN, 4 Dec 2005 (RST†; PE†, EDG, RoH†, EPr†, RS†, LST†, SBT; 2005-174). The bird at Santa Cruz I. is pictured in *N. Am. Birds* 59:654, the one at Cordell Bank in *N. Am. Birds* 60:318. In addition, the committee concluded that reports of an immature at 37° 43.57' N, 123° 11.09' W, west of Middle Farallon I., SF, 26 Jul 2005 (BLS†, JDY; 2005-096) and at 36° 39.3' N, 122° 03.3' W, on Monterey Bay, MTY, 12 Aug 2005 (DD†, DLS; 2005-101) involved the same bird, pictured on the cover of *N. Am. Birds* 60(1). But an immature banded (13B2672) by Hiroshi Hasegawa as a chick on Torishima I., Japan, 22 Apr 2004 and recovered partially decomposed on the Morro Bay sandspit, SLO, 24 Aug 2005 (TJE†; KLG; #LACM 114937; 2005-115) was only possibly the same individual as that near Middle Farallon I. and on Monterey Bay. Pyle (2006) provided photos of all three and feather-by-feather analysis suggesting that all three records pertained to the same bird. The primary breeding colony on Torishima I. hosted 325 pairs that raised 195 chicks in winter 2005–06 (H. Hasegawa in litt.). With a rebounding population it seems clear that some individuals (primarily immatures) are returning to former feeding grounds off California, where the species had been considered "fairly common" (Grinnell and Miller 1944) until drastic declines around the turn of the last century. The committee reviews Short-tailed Albatross reports from 1900 onward.

MOTTLED PETREL *Pterodroma inexpectata* (58, 3). Observations of single birds at 37.92° N, 125.50° W, 103 n. miles sw of Pt. Arena, MEN, 4 Nov 2005 (RP,

TS; 2005-184), 38.01° N, 126.89° W, 182 n. miles w of Southeast Farallon I., SF, 20 Nov 2005 (RP, TS; 2005-185), and 32.49° N, 122.33° W, 132 n. miles sw of San Miguel I., SBA, 1 Dec 2005 (RP, TS; 2005-186) were made from the National Oceanic and Atmospheric Administration (NOAA) research vessel *David Starr Jordan* during oceanographic studies of the waters off western North America. The Mottled Petrel is likely regular from November to February in deep waters far off the central and northern California coast but is reported so rarely that the committee maintains this species on its review list.

GALAPAGOS/HAWAIIAN PETREL *Pterodroma phaeopygia/sandwichensis* (18, 4). Single birds at 40.18° N, 127.93° W, 165 n. miles w of Cape Mendocino, HUM, 9 Aug 2005 (PP; 2005-105) and 40.44° N, 127.83° W, 159 n. miles w of Cape Mendocino, HUM, 9 Aug 2005 (PP; 2005-106) were seen during a NOAA oceanographic cruise. Others at 37° 58' N, 123° 22' W, 16.5 n. miles w of Pt. Reyes, MRN, 9 Aug 2005 (SNGH†; LiH; 2005-109) and 38° 12' N, 123° 24' W, 16.5 n. miles ssw of Bodega Head, SON, 21 Aug 2005 (SBT; RST; 2005-103) were seen from organized pelagic trips, and a photo of the bird off Pt. Reyes on 9 Aug was published by Pyle (2006). The committee has yet to accept a record of either of the component species of this pair. Field characters that might distinguish them are addressed in this issue of *Western Birds* by Force et al. (2007); all California records to date represent birds identified only to the level of the species pair.

STEJNEGER'S PETREL *Pterodroma longirostris* (7, 1). The NOAA oceanographic cruise recorded one at 39.25° N, 125.83° W, 92 n. miles sw of Punta Gorda, MEN/HUM, 18 Oct 2005 (PP†; 2005-147). It was seen in the relatively poorly known waters far off California's northern coast, where the species is probably more regular than the seven records suggest. Pyle (2006) published a distant photo of this bird. Prior records date from 14 to 17 Nov (4 records) and 4 to 10 Jul (2 records).

PARKINSON'S PETREL *Procellaria parkinsoni* (1, 1). One 17.6 n. miles nw of the Pt. Reyes lighthouse, MRN, 1 Oct 2005 (RS†; AD, PE†, EDG†, LiH, CL, LML‡, MJM†, BDP, EPr†, DCR, JaW, JWh; 2005-129) established the first documented record for North America, though it was quickly followed by one near Heceta Bank, Oregon, 22 Oct 2005 (*N. Am. Birds* 60:127). The bird's discovery and identification were discussed in detail by Stallcup and Preston (2006), who included six photographs; another photo appears in Pyle (2006). The primary nonbreeding range of Parkinson's Petrel lies in the eastern Pacific from southern Mexico (about 15° N) to northern Peru (about 5° S) (Pitman and Ballance 1992, Howell and Webb 1995), with a specimen from off Costa Rica (Jehl 1974). Distinguishing the four black species of *Procellaria* at sea, particularly the Westland (*P. westlandica*) and Parkinson's, is a major identification problem; telling Parkinson's Petrel from the similar sized Flesh-footed Shearwater (*Puffinus carneipes*) can be equally challenging (Howell 2006). See also records not accepted, identification not established.

STREAKED SHEARWATER *Calonectris leucomelas* (13, 1). One at 36° 53.5' N, 122° 27.6' W, 12 n. miles wsw of Año Nuevo, SM, 11 Sep 2005 (SBT, DVP; 2005-122) was off the central coast, the region providing the bulk of Calfornia's records. Recent years have brought an increase in records (six since 2001); this species might be more regular in our waters than previously thought.

MANX SHEARWATER *Puffinus puffinus* (87, 5). Five records were accepted with one at 33° 51' N, 118° 32' W, 4.6 n. miles w of Manhattan Beach, LA, 26 Feb 2005 (WW†; 2005-031), one near Santa Cruz I., SBA, 23 Apr 2005 (BKS; 2005-054), one 5.5 n. miles w of Pt. Pinos, MTY, 14 Aug 2005 (DR†, DSS†; 2005-102), one on Monterey Bay, SCZ, 9 Oct 2005 (MB; PE, NKH; 2005-139), and one 1–2 n. miles wnw of Point Pinos, MTY, 21 Aug 2005 (DVP; 2005-111). Monterey Bay accounts for the lion's share of California's Manx Shearwaters; just seven have been recorded

south of Pt. Conception. The Los Angeles County bird was pictured in *N. Am. Birds* 59:324. The Manx Shearwater has also been found regularly from Oregon north to south-coastal Alaska (Mlodinow 2004), prompting speculation that the species is nesting in the Pacific. One tape-recorded calling from a burrow at Triangle I., British Columbia, in July 1994 (Mlodinow 2005) and two birds showing site tenacity at Middleton I., Alaska, in July 2005 (*N. Am. Birds* 59:640) strengthen the evidence for Pacific breeding. A proposal to remove this species from the review list was defeated at the 2007 meeting, but if current trends continue, such removal is likely.

RINGED STORM-PETREL *Oceanodroma hornbyi* (1, 1). One at 33.57° N, 120.40° W, 12.0 n. miles wsw of San Miguel I., SBA, 2 Aug 2005 (PP; CO†; 2005-094) provided the first record not only for California but also for North America. Pyle et al. (2006) provided a full account of this remarkable sighting from a NOAA oceanographic cruise that was full of highlights. The Ringed Storm-Petrel ranges at sea from coastal Ecuador south to central Chile, but its breeding grounds are unknown (it may nest in the Andes). The only other record for the Northern Hemisphere is of a specimen taken on Isla Gorgona off Colombia (Hilty and Brown 1986). *Oceanodroma hornbyi* is sometimes known as Hornby's Storm-Petrel, but the ABA Checklist Committee (Pranty et al. 2006) and the South American Classification Committee (www.museum.lsu.edu/~Remsen/SACCBaseline.html) prefer Ringed Storm-Petrel as the English name.

RED-TAILED TROPICBIRD *Phaethon rubricauda* (27, 5). Single birds at 39.03° N, 128.36° W, 198 n. miles sw of Pt. Gorda, HUM, 8 Aug 2005 (PP; 2005-107), 36.08° N, 126.03° W, 175 n. miles sw of Southeast Farallon I., SF, 5 Nov 2005 (RP†, TS; 2005-180), 32.83° N, 123.87° W, 186 n. miles wsw of San Miguel I., SBA, 9 Nov 2005 (RP, TS; 2005-181), and 34.53° N, 124.74° W, 175 n. miles sw of Pt. Sur, MTY, 24 Nov 2005 (CO†, RP, TS; 2005-182) were all seen during a NOAA oceanographic study of the waters off western North America. Given these four records from California waters, plus another 38 seen outside of the 200-n.-mile limit (Pyle 2006), it seems clear that this species is regular in deep waters far off the California coast. One at Cabrillo Beach, San Pedro, LA, 19 Sep 2005 was taken to the International Bird Rescue Research Center in San Pedro, where it died on 2 Oct 2005; it was retained as a study skin (KLG, SK†; #LACM 114039; 2005-121), providing the first specimen for California. The only previous onshore record for California pertains to one at Bolsa Chica, ORA, 10 Jul 1999 (Rogers and Jamarillo 2002).

BLUE-FOOTED BOOBY *Sula nebouxii* (82, 1). Two photographs, retained by the San Diego Natural History Museum, of a captive immature found alive at Camp Denver Fox, 5 km nw of L. Henshaw, SD, about 18 Aug 1977 (MK†; 2006-089) were submitted by Philip Unitt for review. The occurrence was evidently associated with the passage of Hurricane *Doreen*, and the record was previously published (*Am. Birds* 32:256, Unitt 2004)

BROWN BOOBY *Sula leucogaster* (86, 5). Two at Southeast Farallon I., SF, 14 May–6 Jun 2005 (BKH; 2005-200) were at a location where the species has recently been recorded annually. One at Pt. Piedras Blancas, SLO, 22 Apr–5 Jun 2005 (KC†, TME, KHL, CAM, GPS†, RST†; 2005-053), one at Wishbone Pt. on Point Reyes, MRN, 2 Jul 2005 (LN†; 2005-090), and one at Scorpion Harbor on Santa Cruz I., SBA, 6 Jul 2005 (SWS†; 2005-082) were additional coastal records. Although most California records of the Brown Booby prior to 1980 were inland, records since then have been overwhelmingly coastal and apparently part of a range expansion that has recently brought breeders (and higher numbers) to the Islas Los Coronados in adjacent Baja California (*N. Am. Birds* 60:441). Because of the surge of recent records, this species was considered for removal from the review list at the 2007 meeting and will likely be removed if current trends continue. See also records not accepted, identification not established.

TRICOLORED HERON *Egretta tricolor* (44**, 1). An adult was at the mouth of Salt Cr., Salton Sea, RIV, 22 Dec 2005–3 Jan 2006 (DVP‡; MJB†, OJ†, TJM‡, MSanM; 2005-212). Most of our records are from the Salton Sink and coastal southern California. The committee reviews Tricolored Heron records from 1990 onward.

YELLOW-CROWNED NIGHT-HERON *Nyctanassa violacea* (27, 5). A second-fall bird roosting in Inverness, MRN, 11 Oct–5 Dec 2005 (KB, CL, DEQ, RS, ANW†; 2005-135) established the northernmost record for California. A previously unreviewed photograph of an adult roosting in a eucalyptus at Sea World in San Diego, SD, 3 Apr 1979 (AM†; 2005-113) was published by Unitt (2004). Two two-year-old birds at the Tijuana R. estuary in Imperial Beach, SD, from 27 Jun 2005 (LW-L; MJB, TAB, MJI, GMcC, VM†, TPR†, MS†, RST; 2005-079) and 29 Jun 2005 onward (MJB; GMcC, VM†, MS†; 2005-080) had acquired adult plumage by the end of the year. They paired, built a nest, and fledged three young during the summer of 2006, the first nesting of the Yellow-crowned Night-Heron known for California. A photo appeared in *N. Am. Birds* 59:654. A recently fledged juvenile found struck by a car in El Cajon, SD, 23 Aug 2005 was taken to rehabilitator Meryl Faulkner of Project Wildlife. The bird died, and Philip Unitt prepared the specimen as a study skin (MFP-R†; SDNHM #51156; 2005-117). Photos of the recently dead bird (Figure 2) show an extensively yellow mandible, which concerned some members on the first round that a Black-crowned Night-Heron (*Nycticorax nycticorax*) or hybrid might

Figure 2. This very young Yellow-crowned Night-Heron (*Nyctanassa violacea*), with wisps of down still adhering to its crown feathers, was struck by a car at El Cajon, San Diego County, 23 August 2005, hinting at what might have been California's first breeding by this species. The yellow base to the mandible might suggest a Black-crowned Night-Heron (*Nycticorax nycticorax*) but is a character shared by very young Yellow-crowneds as well. The identification as a Yellow-crowned is further confirmed by structure and measurements, as well as the complete white fringes to the greater coverts. The specimen is now number 51156 at the San Diego Natural History Museum.

Photo by Mary Platter-Rieger

be involved. Measurements confirmed the identification as the Yellow-crowned, as did the complete pale fringes to the greater coverts; very young Yellow-crowned Night-Herons do have a yellow base to the mandible, but this color is typically lost quickly after fledging. The bird's very young age prompted the question of whether it might have hatched locally and so represent California's first breeding of the Yellow-crowned Night-Heron, but it could have fledged in nearby Baja California (though still well north of the species' traditional breeding range). See also records not accepted, identification not established.

GLOSSY IBIS *Plegadis falcinellus* (9, 3). One adult near Calipatria, IMP, 27 May 2000 (MAP†; BDSP; 2000-109B) was initially not accepted (San Miguel and McGrath 2005), but the record was re-reviewed and considered independently from other Glossy Ibis reports from 2001. With acceptance following this reconsideration, it becomes the California's first known Glossy Ibis, predating the bird near Calipatria 1–15 Jul 2000 (McKee and Erickson 2002). An adult near Calipatria, IMP, 16–17 Jul 2005 (PEL; JFe, OJ†, GMcC; 2005-088) and another adult near Westmorland, IMP, 29 Jul 2005 (CC; JHB, GMcC; 2005-092) were likewise in the Imperial Valley south of the Salton Sea, the area responsible for seven of California's nine accepted records. These birds appear to arrive with the large number of White-faced Ibises (*P. chihi*) that move into this area each year. A photo of 2005-088 appeared in *N. Am. Birds* 59:655. The Glossy Ibis has recently been detected as a vagrant to western states at an ever-increasing rate (Patten and Lasley 2000, Faulkner 2004). Since 2001 it has been annual in New Mexico, where the first was recorded in 1995. Arizona's first 19–21 May 2001 (*N. Am. Birds* 55:333) was quickly followed by five more, including three in April and May 2006 (*N. Am. Birds* 60:417). See also records not accepted, identification not established.

ROSEATE SPOONBILL *Platalea ajaja* (121, 103). One in its first fall in Imperial Beach, SD, 14 Oct 2005 (AM†; DWA†, VM†, RTP; 2005-137) represented the second record for San Diego County. Another in its first fall bird at the Whitewater R. mouth at the n end of the Salton Sea, RIV, 14 Nov 2005 (WW; 2005-158) was at a site more usual for the species. The San Diego bird has a published photo in *N. Am. Birds* 60:139.

In 2005 an assembled batch of 34 Roseate Spoonbill records, involving as many as 160 individuals dating between 1903 and 1978, was circulated through the committee to determine which were acceptable and which should remain unreviewed. Many of these records were supported only by citations in publications or journals, but observers' field notes and other such documentation were added when available. The committee required, at a minimum, a description that included the color of the bird(s) and bill shape for acceptance. This process resulted in the acceptance of 11 records involving 101 birds, all from the Salton Sink and involving notable influxes in 1973 (76 birds) and 1977 (16 birds). The accepted records are as follows: up to six along the southeast shore of the Salton Sea, IMP, 23 Jun–8 Oct 1951 (Wooten 1952, *Audubon Field Notes* 5:308 and 6:37; 2004-304); up to two along the south shore of the Salton Sea, IMP, 20 Jul–1 Sep 1969 (GMcC; *Audubon Field Notes* 23:694 and 24:98; 2004-309); up to 45 along the south shore of the Salton Sea, IMP, 14 Jun–26 Oct 1973 (GMcC, *Audubon Field Notes* 27:918 and 28:107; 2004-313); up to 14 at the Whitewater R. mouth at the north end of the Salton Sea, RIV, 16 Jun–16 Sep 1973 (GMcC; *Audubon Field Notes* 27:918 and 28:107; 2004-314); one at Finney L., IMP, 21 Jul 1973 (GMcC; *Audubon Field Notes* 27:918; 2004-315); up to 16 on the New R. near Seeley, IMP, 1–14 Jul 1973 (GMcC; *Audubon Field Notes* 27:918; 2004-316); one on the Wister Unit of the Imperial W. A. at the southeast end of the Salton Sea, IMP, 13 Jun–19 Sep 1976 (GMcC; *Am. Birds* 30:1002 and 31:222; 2004-324); up to seven around the New R. mouth at the south end of the Salton Sea, IMP, 3 Jun–19 Oct 1977 (GMcC, *Am. Birds* 31:1189 and

32:256; 2004-325); one in the Wister Unit, IMP, 10 Jul–5 Sep 1977 (GMcC; *Am. Birds* 31:1189 and 32:256; 2004-326); up to seven on the New R. near Seeley, IMP, 17 Jul–5 Sep 1977 (GMcC; *Am. Birds* 31:1189 and 32:256; 2004-327); and one at the Whitewater R. mouth, RIV, 25 Aug–23 Sep 1977 (GMcC; *Am. Birds* 32:256; 2004-328). The committee has not yet reviewed two 1977 specimens reported by Patten et al. (2003) but plans to do so in the near future: one from the south end of the Salton Sea, IMP (#SDNHM 38573), and one from the north end of the Salton Sea, RIV (#SBCM M5186). Note also that the Roseate Spoonbill account in Patten et al. (2003) contains many mistaken dates not italicized above.

The spoonbill's pattern in Arizona has been similar to that in California: it reached the lower Colorado R. in 1942, 1959, 1969, 1973, and 1977 (Rosenberg et al. 1991), but the only records since then have been from 1992, 1996 (2 records), 1997 (2), 2000, and 2004 (2) (Rosenberg and Witzeman 1998, Rosenberg 2001, Arizona Bird Committee data).

MISSISSIPPI KITE *Ictinia mississippiensis* (36, 3). One in its first spring at Furnace Cr. Ranch, INY, 29–30 May 2005 (MB; JHi†, OJ, DVP; 2005-063) was at California's hotspot for the species on a typical date. A juvenile near Palos Verdes Estates, LA, 18 Sep 2005 (KGL; 2005-126) and a first-fall immature over the Tule R. at Highway 43, TUL, 5 Oct 2005 (MSanM; 2005-131) were less expected, as the Mississippi Kite is more frequent in California in spring.

COMMON BLACK-HAWK *Buteogallus anthracinus* (4, 1). An adult was at Delta Pond near Santa Rosa, SON, *14* May–*29* Oct 2005 (KB, JLD, KH‡, LiH, SM†, DEQ; 2005-060); its photo was published in *N. Am. Birds* 59:650. Although California's first two records of the Common Black-Hawk were from the state's southeast, as one might expect for this primarily tropical species, the last two, remarkably, are from northern California (see also Cole et al. 2006). See also records not accepted, identification not established.

HARRIS'S HAWK *Parabuteo unicinctus* (45, 1). One adult near California City, KER, 5 Mar 2001 (JAH†; 2001-070) posed a dilemma for many members. A favorite of falconers, this species clearly occurs as an escapee since some have been photographed in California with jesses attached to their legs. Yet, on occasion, it irrupts (Patten and Erickson 2000). Distinguishing which records are acceptable is difficult; future committees may be able to discern a pattern better. In this case, since there were other records from this period and there was no evidence of recent captivity, the record was accepted.

CRESTED CARACARA *Caracara cheriway* (7, 1). A first-winter bird at Finney L., IMP, 1 Jan 2005 (TEW; 2005-017) was unanimously accepted. While some past records, including some that have been accepted, have been questioned on the basis of natural occurrence, this was the first to enjoy unanimous first-round support. Natural vagrancy in this species is perhaps more likely in southeastern California than it is along the central and northern coasts. In Arizona the caracara has a fall-and-winter pattern of dispersal, even as far west as the Colorado R. (Rosenberg et al. 1991), supporting the notion that the Imperial Valley might receive natural vagrants. See also records not accepted, identification not established.

AMERICAN GOLDEN-PLOVER *Pluvialis dominica* (10**, 6). One in basic plumage was near Obsidian Butte, IMP, 8 Apr 2004 (JLD†, GMcC; 2004-052; Figure 3). Single juveniles were near Arcata, HUM, 28 Aug–3 Sep 2004 (JT; RF†; 2004-134), at Carmel R. State Beach, MTY, 10–12 Sep 2005 (CL, LML ‡; 2005-136), on the Oxnard Plain, VEN, 11–23 Sep 2004 (WF; CAM; 2004-142), at Guadalupe, SBA, 2–3 Oct 2005 (WF†; JM†; 2005-138), and inland at the Corcoran Avenue ponds, KIN, 5 Oct 2005 (MSanM†; 2005-132). While the identification of juveniles in fall, based on wing length, primary extension, and overall color and pattern, remains

Figure 3. The committee undertook review of reports of the American Golden-Plover (*Pluvialis dominica*) in California starting in 2004. It has not had an easy time assessing records because of the close similarity of the Pacific Golden-Plover (*P. fulva*) in some plumages, especially in spring. While adult Pacifics attain their breeding plumage in March, Americans molt later and can closely resemble first-spring Pacifics that retain much of their basic plumage. Furthermore, tertial molt can complicate assessment of the extension of the primaries past the tertials. American Golden-Plovers in patchy April plumage are identifiable when they show fresh primaries since first-spring Pacifics have very worn, brownish primaries. This American Golden-Plover was at the south end of the Salton Sea, Imperial County, 8 April 2004.

Photo by Jon L. Dunn

relatively straightforward, the species' identification in spring has proven more difficult for the committee to assess. Although adult Pacific Golden-Plovers (*P. fulva*) molt into alternate plumage much earlier in the spring than do American Golden-Plovers, second-year Pacific Golden-Plovers may not molt into full breeding plumage at all in their first summer (P. Pyle pers. comm.). Thus the committee does not consider it safe to assume that an April golden-plover in basic or transitional plumage is necessarily an American. However, in spring American Golden-Plovers are expected to have fresh blackish primaries with neat pale fringes regardless of the plumage state of the rest of the bird; any Pacific Golden-Plover in comparable plumage from late March on should show the heavily worn juvenal primaries of a first-summer bird (P. Pyle pers. comm.). The committee thus encourages observers to note the condition of the plumage, especially the primaries, of any spring golden-plover carefully. The committee reviews American Golden-Plover reports from 2004 onward. See also records not accepted, identification not established.

LESSER SAND-PLOVER *Charadrius mongolus* (10, 1). One adult at Clam Beach near McKinleyville, HUM, 10–*12* Jul 2005 (KB, EAE, KR†; 2005-083; Figure 4) was only the third adult accepted for the state. Plumage features, notably the white forehead bisected by a black line, indicated that this bird (like California's previous

Figure 4. This adult Lesser Sand-Plover (*Charadrius mongolus*) at Clam Beach, Humboldt County, 11 July 2005, is a member of the *mongolus* subspecies group, consisting of *C. m. mongolus* and *C. m. stegmanni*, by virtue of the black line bisecting the white forehead patch. All North American records of adults have been of this subspecies group, with *C. m. stegmanni*, a regular migrant in western Alaska, being the most probable subspecies.

Photo by Kerry Ross

adults) was of the *mongolus* group of subspecies. The subspecies in this group occurring nearest California is *C. m. stegmanni*, which breeds east to the Chukotski Peninsula of easternmost Russia and is a rare migrant in w Alaska, where the first North American breeding was confirmed on St. Lawrence I. in Jun 2006 (*N. Am. Birds* in press). In the lack of a California specimen of the Lesser Sand-Plover, we presume that California records pertain to this subspecies.

WILSON'S PLOVER *Charadrius wilsonia* (10, 1). One male at Batiquitos Lagoon, SD, 2 Jun–1 Jul 2005 (MJB†, DVB, PAG, MTH, MJI, GMcC, MS†; 2005-064) was frequenting a nesting colony of the Snowy Plover (*C. alexandrinus*) and Least Tern (*Sternula antillarum*). All but one of California's previous Wilson's Plovers occurred in spring and summer, between 9 Apr and 11 Aug. A fine in-flight photo appears in *N. Am. Birds* 59:656.

AMERICAN OYSTERCATCHER *Haematopus palliatus* (32, 3). One on Anacapa I., VEN, 16 Oct 2005 (JFe; 2005-170) was probably the same bird seen there on 6 Jun 2004 (2004-116). One at Prisoner's Harbor on Santa Cruz I., SBA, 16 Apr–14 May 2005 (BKH, CH; DMC, BKS, AT†; 2005-055) and another on Santa Barbara I., SBA, 24 Sep 2005 (NL†; 2005-134) were also on the Channel Islands, where most of California's American Oystercatchers have been recorded. A photo of 2005-055 appears in *N. Am. Birds* 59:494. One at Crescent Bay in Laguna Beach, ORA, 27–29 Dec 2005 (KP†; 2006-037) was on the mainland coast. Since hybrids with the Black Oystercatcher (*H. bachmani*) along the west coast of Baja California are frequent (Jehl 1985), the committee carefully considers the extent of hybrid characters for all reports of the American. Although specimens of *H. p. frazari* from the Gulf of California have a clean demarcation between black and white

Figure 5. Reports of the Iceland Gull (*Larus glaucoides*) are among the most difficult records for the committee to assess because of potential confusion and introgression with Thayer's Gull (*L. thayeri*). This second-winter Iceland Gull at Milpitas, Santa Clara County, 22 February 2005 becomes the third accepted for California and the first in this plumage. This bird is especially dainty in structure, with the head rounded and the bill small in comparison to that of other gulls of similar size. It also shows a clean whitish iris and clean white primaries that simplify the identification in this case.

Photo by Alvaro Jamarillo

on the breast, those from the Pacific coast of the Baja California Peninsula show a ragged border, presumably because of introgression with the Black Oystercatcher, so all coastal California American Oystercatchers may have some introgression of Black Oystercatcher genes. However, the committee has long used the scale published by Jehl (1985), reprinted by Erickson and Terrill (1996), as a guide for the acceptability of American Oystercatcher reports. The committee urges observers to familiarize themselves with Jehl's scale and to try to assess all characters possible in any report of the American Oystercatcher.

RED-NECKED STINT *Calidris ruficollis* (10, 1). One, probably in its first summer, at China L., KER, 13 Jun 2005 (SSt; DVB, JLD, MTH†, KHL†, MSanM†, RSt†, JCW; 2005-072) was a real surprise given the location and the date. Color photos of this bird appear in *N. Am. Birds* 59:692 and on the cover of *Western Birds* 37(2). It represents only the second inland record for the state; the mid-June date is also odd in that seven of nine previous records pertain to fall adults (dates 29 Jun–29 Jul). Other inland records in the West are from Henderson, Nevada, 27–28 Jul 1992 (*Am. Birds* 56:1158) and El Paso, Texas, 17–22 Jul 1996 (Lockwood and Freeman 2004).

CURLEW SANDPIPER *Calidris ferruginea* (35, 1). One on the Los Angeles R. in Long Beach, LA, 13–14 Aug 2005 (RBa; AB†, KLG, RR†, JFe†, MSanM; 2005-099) was either a one-year-old or an adult in prebasic molt, which fits with the timing of this southbound migrant. In California the occurrence of adult Curlew Sandpipers peaks from mid-July to mid-August, that of juveniles from September through mid-October.

Figure 6. The Slaty-backed Gull (*Larus schistisagus*) was confirmed for California with repeated occurrences at Half Moon Bay, San Mateo County, beginning in 2001. Three were found there between January and March 2005, and an amazing total of at least ten followed from December 2005 to March 2006. This second-winter individual photographed there 19 December 2005 represented California's sixth record.

Photo by Alvaro Jamarillo

LITTLE GULL *Larus minutus* (91, 2). An adult was at Ballona Cr. in Marina del Rey, LA, 29 Jan 2005 (TEW; 2005-042). Another adult near the Cordell Bank, MRN, 4 Dec 2005 (RST; SBT; 2005-191) was seen during a pelagic trip, representing the first offshore record for California. An adult at L. Perris, RIV, 12 Nov 2005–27 Mar 2006 (HBK; BLC; 2005-153) was considered the same bird (2004-193) there the previous winter.

ICELAND GULL *Larus glaucoides* (3, 1). A second-winter bird at Hidden L. in Milpitas, SCL, 22 Feb–7 Mar 2005 (AJ†; EDG†, DVP‡; 2005-110; Figure 5) was obviously paler than the Thayer's Gulls (*L. thayeri*) nearby and had a delicate pale-based bill and pale eyes matching typical second-winter Iceland Gulls found along the Atlantic coast in winter. The Iceland Gull presents a problem perhaps as complex as any this committee ponders. The difficult and imprecise identification and uncertain taxonomy have resulted in acceptance of only two prior records (see Erickson and Hamilton 2001). Most reports of the Iceland Gull in California pertain to first-year birds, whose identification criteria are still unknown; extremes seem to be rather easy to categorize, but it is difficult to determine where some features indicate one species over the other. In this case, the bird looked like a typical Iceland Gull and outside of the range of presumed Thayer's. See also records not accepted, identification not established.

Figure 7. The spacing of the primaries has been proposed as a field mark useful for distinguishing the Yellow-bellied Flycatcher (*Empidonax flaviventris*) from the similar Western Flycatcher (*E. difficilis/occidentalis*). This Yellow-bellied at Galileo Hill, Kern County, 3 October 2004, shows atypical primary spacing yet has the crisp yellowish wing edging, even-width eye ring, lack of a crested appearance, and relatively short tail that allows for identification of silent individuals.

Photo by Bob Steele

LESSER BLACK-BACKED GULL *Larus fuscus* (28, 3). One at the mouth of Zuma Cr., LA, 13 Mar 2005 (KLG; ET†; 2005-039) provided the first coastal record of a bird in first-winter plumage. An adult at Doheny Beach State Park, ORA, 12–15 Dec 2005 (MJI†; 2005-188) was at the same location where an adult spent most winters from December 1994 to March 2002. An adult at Obsidian Butte, IMP, 4 Dec 2005 (GMcC; 2005-169) was the 12th Lesser Black-backed Gull recorded from the Salton Sea area.

SLATY-BACKED GULL *Larus schistisagus* (6, 6). Venice State Beach, Half Moon Bay, SM, proved to be a magnet for this gull newly verified for California. A second-winter bird was there 1 Mar 2001 (RSTh†; 2006-090, first submitted in 2006), a second-winter bird on 13 Jan and 20 Feb 2005 (AJ†; JM†; 2005-015), a third-winter bird 20 Jan–19 Feb 2005 (AJ†, DVP†; ToE†, RLb†, MJM†, JM†, JeP†, DR†, MMR, DSS†, FT; 2005-016), and a fourth-winter bird or adult 21 Mar 2005 (AJ†; 2005-048). A photo of 2005-015 is in *N. Am. Birds* 59:322, one of 2005-048 in *N. Am. Birds* 59:490. An adult at Venice State Beach 2 Dec 2005–8 Mar

2006 (RSTh; 2006-044) and a second-winter bird there 19 Dec 2005–8 Mar 2006 (AJ†; RSTh; 2005-199; Figure 6) were the first of 13 reported along the central coast of California during the winter of 2005–06, most at Venice Beach as well; the question how many, if any, of these reports pertain to the same bird is under review. The sudden spate of records seems due in part to observer awareness and the diligence of Ronald S. Thorn and Alvaro Jaramillo. In addition, it appears that Half Moon Bay does have a unique population of gulls, with thousands of the Western (*L. occidentalis*) and Glaucous-winged (*L. glaucescens*), with which the Slaty-backeds seem to prefer to associate.

The committee has struggled with the Slaty-backed Gull in the past, previously reviewing and not accepting five records. Hybrids of the Slaty-backed with the Glaucous-winged and Vega Herring Gull (*L. argentatus vegae*) are known and may be regular in eastern Russia (King and Carey 1999), demanding that vagrants to North America be treated with caution. Although Gustafson and Peterjohn (1994) reported significant variation in mantle color within the Slaty-backed Gull and believed it was not due to introgression with paler-mantled species, King and Carey (1999) pointed out published reports of hybrids, providing a contrary view that is almost certainly more accurate. Some extralimital records for North America may represent hybrids, such as that for Ohio 28 Dec 1992–8 Feb 1993 (*Am. Birds* 47:263, Gustafson and Peterjohn 1994), that for Maryland 6–23 Feb 1999 (*N. Am. Birds* 53:154, Iliff in litt. to Maryland/D.C. Records Committee), and a specimen from Guam (USNM 201459, Iliff pers. obs.). The committee concluded that none of the Slaty-backed Gulls accepted for California showed hybrid characters.

A well-documented adult Slaty-backed Gull at St. Louis, Missouri, 20 Dec 1983–29 Jan 1984 (Goetz et al. 1986) first illustrated this species' potential for vagrancy. Records from Texas, New York/Ontario, and the Pacific Northwest followed in the 1990s. Since 2002 the species has been found even more frequently, with records from Key West, Florida, Colorado, New Hampshire (three through January 2007), New York, Minnesota (two through January 2007), and Newfoundland. While the species has almost certainly been overlooked in California in the past, it seems clear from records in the Midwest that the Slaty-backed's frequency has increased substantially in the past decade. The committee is reconsidering two records previously not accepted.

LONG-BILLED MURRELET *Brachyramphus perdix* (18, 3). Two were at Salmon Cr. Beach, SON, 7 Jul 2004 (RST†; 2004-102). One found dead at New Brighton State Beach, SCZ, 4 Oct 2004 (HN†; 2005-035; specimen to Moss Landing Marine Laboratory) provided the first specimen from coastal California; the four previous California specimens are from Mono L. Midsummer records such as the one from Sonoma County remain enigmatic: they could represent summering nonbreeders, vagrants from Asia, or even prospective breeders. See also records not accepted, identification not established.

*RUDDY GROUND-DOVE *Columbina talpacoti* (107, 1). A singing male at Furnace Cr. Ranch in Death Valley National Park, INY, 23 May 2003 (JLD; 2003-081) was considered the same male present there 11 Oct–3 Nov 2002 (RF†; GMcC, TMcG; 2002-188). The committee reviews Ruddy Ground-Dove records through 2003.

CHUCK-WILL'S-WIDOW *Caprimulgus carolinensis* (3, 1). An underweight female captured in Crescent City, DN, 2 Dec 2005 by Carl Bookhamer was cared for by the Humboldt Wildlife Care Center, then released ~75 miles away at Humboldt Bay, HUM, in Feb 2006 (GF†; 2006-021). The two prior records for California are from Half Moon Bay, SM, 16 Oct 1986 (Bailey 1989, Langham 1991) and near Loleta, HUM, 4 Jan 1989 (Harris & Hawkins 1990, Pyle and McCaskie 1992). That two records are from December and January seems surprising but perhaps reflects the stress of cold, making this cryptic species more likely to be found. Harris and

Hawkins (1990), however, did not consider the January specimen from Humboldt unhealthy before it was struck by a car.

GREEN VIOLET-EAR *Colibri thalassinus* (1, 1). The record of one near Iris Meadow on Mount Pinos, KER, 30 Jul–1 Aug 1977 (DM; EAC, SWC†; 2005-150) was first reviewed in 1986 (1978-040; Roberson 1986) on the basis of field notes and not accepted because of potential confusion with the Sparkling Violet-ear (*C. coruscans*) and concerns about escape from captivity. Photos taken at the time but long unavailable to the committee came to light in 2005; though blurry, they show that this bird had a well-defined violet ear patch and a contrasting greenish chin and throat. The chin color eliminates *C. coruscans*, and the blue wedge on the upper chest specifies the more northerly nominate subspecies of *C. thalassinus*—like other vagrant Green Violet-ears in North America. While concerns about origin were central in committee discussions in 1986, because of the pattern of vagrancy that has since emerged (see Newfield 2001, Williamson 2001) during reconsideration no committee members questioned the bird's origin. Texas claims the bulk of U.S. records, but the species has strayed as far north and east as Ontario (Newfield 2001), West Virginia (*N. Am. Birds* 57:489), and New Jersey (*N. Am. Birds* 60:47); the only prior records west of Texas are of one in Colorado 26–27 Jul 1998 (*N. Am. Birds* 52:483), one in New Mexico 16–18 Nov 2004 (*N. Am. Birds* 59:122), one in Alberta (Williamson 2001), and one at La Paz, Baja California Sur, 25 Jan 1984 (hypothetical; Howell et al. 2001). Amazingly, the only other California report, from Berkeley, ALA, 18 Aug 1977 (1977-159, Roberson 1986) came less than a month after that from Mount Pinos; that record failed the committee's acceptance 2–8 on the question of identification.

Figure 8. The Dusky-capped Flycatcher (*Myiarchus tuberculifer*) staged an invasion to California in winter 2005–06, with eleven accepted records (exceeding the previous high annual total of eight). This one was at Brawley 4 December 2005.

Photo by Kenneth Z. Kurland

BROAD-BILLED HUMMINGBIRD *Cynanthus latirostris* (69, 5). The total of five in southern California from October to December was above average. A female in Inyokern, KER, 26–31 Oct 2005 (SSt†; RS†, KHL†; 2005-142) and a first-fall male in Big Pine, INY, 29 Oct–16 Nov 2005 (JHe†; JLD, CH†, DeH, D&JP, SSt, TV†; 2005-160) were on the eastern side of the Sierra Nevada, where few are recorded. An adult male in Borrego Springs, SD, 5 Dec 2005–8 Feb 2006 (DWA†, MJB†, ToE†, GMcC, MS†, MSanM, TRS; 2005-172) and two in Mission Viejo, ORA, a first-winter male 6 Dec 2005–22 Feb 2006 (JEP†; MJI†, MSanM; 2005-173) and a female nearby 17 Dec 2005–22 Jan 2006 (JEP, CAM; 2006-038), were at locations in southern California with more precedent. A color photo of the Borrego Springs bird is published in *N. Am. Birds* 60:319, and a photo of the Inyokern bird is in *N. Am. Birds* 60:140.

RUBY-THROATED HUMMINGBIRD *Archilochus colubris* (8, 2). A female (age undetermined) at Furnace Cr. Ranch in Death Valley National Park, INY, 3 Sep 1988 (JLD†; MTH†, GMcC, MAP; 1988-163) establishes the fourth record for California. The original documentation was lost when it was sent out to experts for review, but some slides remained as a less-than-optimal basis for this record's overdue circulation. Descriptions suggest that the bird was not an immature male, since colored gorget feathers would have been noted if present. Although the photos do not show the diagnostic shape of the outermost (tenth) primary, the committee believed that this bird was identifiable through the combination of a short bill, bright green back, clean

Figure 9. Accurate assessment of a bird's age is often essential to the review process, especially in the case of returning birds. In many species molt limits—the contrast between fresher new feathers generated by a recent molt and older, more worn feathers generated in a previous molt—are critical for this evaluation. On these Thick-billed Kingbirds (*Tyrannus crassirostris*), note a molt limit in the immature (A) where fresh gray-edged inner greater coverts contrast with older cinnamon-edged juvenal coverts. No molt limits are apparent in the adult (B), which also shows more squarish primary tips and rectrices. The first-winter bird (A) was photographed at L. Hodges, San Diego County, 29 November 2005, while the adult (B) was a returning bird photographed at Santa Paula, Ventura County, 4 December 2005.

Photos by Anthony Mercieca (A) and Jim Greaves (B)

white throat and underparts, and bright green forecrown. Especially important were the dark ear coverts and extensively dark lores, which appear to be nearly diagnostic of the female Ruby-throated with respect to the female Black-chinned (*A. alexandri*) (Iliff in comments). Pyle further commented that since in *Archilochus* females are longer-billed than males, the bird's short bill probably excludes the Black-chinned. Also supportive, but not diagnostic, were the blunt fifth rectrix (nipple-shaped in the *adult* female Black-chinned), viewable in one slide, and the lack of tail wagging while feeding (the Black-chinned regularly bobs its tail while feeding in flowers). A first-fall female on Southeast Farallon I., SF, 3–5 Sep 2005 (BKH†; MB; 2005-201) was measured and examined in hand, simplifying the identification considerably.

GREATER PEWEE *Contopus pertinax* (37, 1). One singing male near Wooded Hill Campground, Laguna Mts., SD, 11 Jun–3 Jul 2005 (BLC, MMa; MJB, JLD, MTH†, KZK†, GMcC, DP, MS†; 2005-069) established the first summer record for California; the 36 previous records extend from 11 September to 14 April (*contra* Cole et al. 2006). Although no mate was seen in the area, the bird was singing and appeared to be maintaining a territory; rectrix shape indicated that it was in its first summer. A photo of this bird appeared in *N. Am. Birds* 59:692. See the Red-faced Warbler and Dusky-capped Flycatcher for a discussion of other Arizona/west Mexican species in California in 2005.

YELLOW-BELLIED FLYCATCHER *Empidonax flaviventris* (20, 1). One first-fall bird studied at Galileo Hill, KER, 3 Oct 2004 (TEW; KHL†, LS†, RSt†; 2004-160; Figure 7) is the third accepted from fall 2004—a record total (see Cole et al. 2006). No vocalizations were heard, and it is illustrative of the difficulties this species presents that three rounds of review were required for acceptance, despite the excellent photos. Reports of the Yellow-bellied Flycatcher should carefully eliminate not only the Pacific-slope (*E. difficilis*) and Cordilleran (*E. occidentalis*) but also the Acadian (*E. virescens*). Confusion emerged from the fact that this bird and one in Imperial County 3–5 Sep 2004 (2004-130; Cole et al. 2006) showed a large gap between primary 7 and primary 6, which Heindel and Pyle (1999) suggested is more likely in the Pacific-slope/Cordilleran. Erickson et al. (2001) pointed out other problems with over-reliance on primary spacing in this complex. In reports of any *Empidonax* we encourage observers to continue to note primary spacing, when possible, but we strongly caution against using it as a primary basis for identification. Instead, focus on the head shape, wing color (including wingbars and tertial edges), eye ring color and shape, presence of olive or brown tones, presence or absence of breast streaking, bill length and shape, and tail length. See also records not accepted, identification not established.

DUSKY-CAPPED FLYCATCHER *Myiarchus tuberculifer* (76, 11). The number of Dusky-capped Flycatchers found in California in winter 2005–06 was an unprecedented eleven. One at Arcata, HUM, 23 Nov–11 Dec 2005 (BED, KR†; 2005-162) was California's third north of Sonoma County; those previous two were also in Humboldt County. There is just one record north of California: one at Newport, Oregon, 2–11 Jan 1996 (Marshall et al. 2004). Another northerly bird was at Meder Canyon, Santa Cruz, SCZ, 5 Dec 2005–11 Mar 2006 (SAG; MB, DVP; 2005-176). Imperial County had only three prior records, but four Dusky-capped Flycatchers were found there in 2005–06. The first was on the Colorado R. at Picacho State Recreation Area, IMP, 27 Nov–19 Dec 2005 (GCH; ToE; 2005-194); the others were in the Salton Sink: one at Cattle Call Park, Brawley, IMP, 1–6 Dec 2005 (BM†; MJB†, GMcC, MSanM, KZK†; 2005-167; Figure 8), one at Ramer L., IMP, 20 Dec 2005–17 Feb 2006 (BM†; ToE†, MTH, OJ†, GMcC, DVP; 2005-192), and one at the headquarters of the Wister Unit of the Imperial W. A. near Niland, IMP, 2 Dec 2005–4 Mar 2006 (MJB†, RC†, JLD, MTH†, OJ†, CAM, GMcC, TMcG†, MMe†, DVP; 2005-195). A photo of the bird at Brawley is published in *N. Am. Birds* 60:285. Five others were

on the coastal slope of southern California, region of nearly half (43%) of California's prior records: one at Mesa Verde Golf Course, Costa Mesa, ORA, 30 Nov 2005–22 Feb 2006 (JEP†; MJI†; 2005-171), one at Heritage Park, La Verne, LA, 6 Dec 2005–10 Jan 2006 (MJSanM†; BMcM†, MSanM; 2005-210), one at Rynerson Park, Lakewood, LA, 18 Dec 2005–3 Mar 2006 (KLG, KSG†, OJ†; 2006-006), one at Los Angeles Arboretum, Arcadia, LA, 17–20 Dec 2005 (JoP‡, TEW; 2006-014), and one along lower Atascadero Cr., Goleta, SBA, 31 Dec 2005–20 Feb 2006 (CAM; DMC, JMG†, NL; 2006-002). Most of these birds were photographed, but descriptions of the diagnostic mournful calls were helpful as well; vocalizations are often critical in confirming the identity of *Myiarchus* flycatchers.

Three additional Dusky-capped Flycatchers were within a few miles of the California line—two in Baja California and one in Arizona—further bolstering the total from this remarkable incursion (*N. Am. Birds* 60:270, 288). The Red-faced Warbler, another species of Arizona/west Mexican origin, also occurred in better than average numbers in California in 2005. See also records not accepted, identification not established.

GREAT CRESTED FLYCATCHER *Myiarchus crinitus* (46, 1). One at the Big Sur R. mouth, MTY, 10 Oct 2004 (MB, RST; 2004-171) was seen briefly but ultimately achieved 9–1 support in its third round, after documentation from the second observer was added in round 2. One reviewer was concerned that the identification placed too much emphasis on the pale mandible base; the committee reminds observers that while they are most extensive in the Great Crested, pale mandible bases are shared by some Ash-throated (*M. cinerascens*) and Dusky-capped flycatchers.

SULPHUR-BELLIED FLYCATCHER *Myiodynastes luteiventris* (16, 1). One seen by a single observer at Summerland, SBA, 3 Oct 2005 (GR; 2005-133) was described in enough detail to eliminate the similar Variegated (*Empidonomus varius*) and Piratic (*Legatus leucophaius*) flycatchers from consideration. Although the record was accepted by 9 out of 10 members, the one detractor and most of those accepting commented that Streaked Flycatcher (*Myiodynastes maculatus*) was not eliminated and that the record would need reassessment if Streaked Flycatcher were documented to occur in California. The Streaked is still unknown from the United States but occurs north to s Tamaulipas in e Mexico. Reports of *Myiodynastes* flycatchers can be strengthened considerably if observers note chin color (pale in the Streaked, dark in the Sulphur-bellied), strength of malar stripes (thicker in the Sulphur-bellied), color of wing edging, and voice. Thus far, the committee has been content to consider vagrants of *Myiodynastes* to be Sulphur-bellied unless proven otherwise. Sulphur-bellied Flycatchers in California have been remarkably consistent as to season: with one exception (14 Jun 1998; Erickson and Hamilton 2001), all records fall within the period 13 Sep–20 Oct.

THICK-BILLED KINGBIRD *Tyrannus crassirostris* (17, 2). A first-winter bird at Banning Park, Wilmington, LA, 10 Nov 2005–28 Apr 2006 (KGL; KLG, MJI†, OJ†, TMcG†, MMe†, MSanM, TEW; 2005-157) was the second-latest-staying Thick-billed Kingbird known in California, bested only by one also in Los Angeles County 3 Nov 1984–10 May 1985 (1984-266; Dunn 1988). Another first-winter bird in Del Dios at L. Hodges, SD, 28 Nov 2005–13 Apr 2006 (SES; DWA†, LA, MJB, TAB†, JLD, ToE†, DF†, CAM, GMcC, GLR, MBS†, TEW; 2005-163; Figure 9A) is pictured on the cover of *W. Birds* 37(3) and in *N. Am. Birds* 60:286. An adult at River View Ranch, Santa Paula, VEN, 3–19 Dec 2005 (JMG†; 2005-175; Figure 9B) was a returning bird and probably wintered for its eighth consecutive year at that location.

Rufous or cinnamon edging to the upperwing coverts and rectrices and two generations of feathers in the tertials, median coverts, and greater coverts identify a Thick-billed Kingbirds as in its first winter. Accurate assessment of the age of a Thick-billed Kingbird, and many other species, is crucial for the CBRC in trying to determine which individuals might be returnees. The arrival of two new birds in winter 2005–06

may be connected to the record total of the Dusky-capped Flycatcher since both it and the Thick-billed Kingbird reach California from the southeast.

YELLOW-THROATED VIREO *Vireo flavifrons* (106, 3). One singing male was at Loch Lomond Recreation Area, near Ben Lomond, SCZ, 1–3 Jun 2005 (DLS; 2005-074), and two individuals were at San Clemente I., LA: 29 May 2005 (SWS†; 2005-073) and 2 Jun 2005 (SWS†; 2005-073A).

The two San Clemente I. birds were initially submitted as a single report, but after two rounds of deliberation the CBRC decided that two individuals were involved since the first sighting was from the southeastern end of the island (Grove Canyon) and the second from the far north (Bar Drainage), about 27 miles away. Two members disagreed, with dissenters pointing out that the bird would have been moving north (as expected in spring) and that Southeast Farallon I. has but one record of the Yellow-throated Vireo (Richardson et al. 2003).

BLUE-HEADED VIREO *Vireo solitarius* (43, 2). One at Mason Regional Park, Irvine, ORA, 3 Oct 1998 (JEP; 2006-040) was first submitted in 2006. An adult banded on Southeast Farallon I., SF, 22 Nov 2005 (BKH†; 2005-203) was one of California's latest in fall and extended the late date for the island by 20 days (Richardson et al. 2003). See also records not accepted, identification not established.

YELLOW-GREEN VIREO *Vireo flavoviridis* (86, 1). One in its first fall at El Capitan State Beach, SBA, 4 Oct 2005 (GCH; 2005-193) coincided with the species' early October peak. The observer described, among other relevant field marks, extensive pale pinkish at the base of the mandible, a little-known field mark not shown by the similar Red-eyed Vireo (*V. olivaceus*), which typically has a pale blue-gray base to the mandible (matched rarely by the Yellow-green). See also records not accepted, identification not established.

BLUE JAY *Cyanocitta cristata* (14, 2). One was in Redwood Valley, HUM, 8 Jan–25 May 2005 (KB, RFo†; 2005-010) and another was between Rockville and Fairfield, SOL, 19 Dec 2005–25 Apr 2006 (DWA†, WGB†, LWC, ToE†, EDG†, JFH†, CL, CAM, GMcC, EPr†, DSS†, JCS†; 2006-003); both were in their first winter. Leong (2006) reported the one in Solano County in more detail, including a cover photo. Both prior California Blue Jays whose age was determined were also first-winter birds; in the Blue Jay, the alula and primary coverts are barred in adults, unbarred in first-year birds (Pyle 1997). The bird in Humboldt County stayed almost a month later than California's previous latest Blue Jay, the state's first: a male *C. c. bromia* collected at Chico, BUT, 24 Apr 1950 (Patten et al. 1995).

SEDGE WREN *Cistothorus platensis* (9, 1). One at the mouth of Colma Cr., South San Francisco, SM, 9–26 Jan 2005 (RSTh; DBe, KB, JM, DSS†; 2005-003) was the second for midwinter and the second for San Mateo County, following one at Half Moon Bay 7 Dec 2002–15 Mar 2003 (2002-201; Cole and McCaskie 2004). The one in 2005 preferred the upper reaches of a saltmarsh, the same area frequented by a Nelson's Sharp-tailed Sparrow (*Ammodramus nelsoni*) the previous year.

ARCTIC WARBLER *Phylloscopus borealis* (4, 1). One in its first fall bird banded at Southeast Farallon I., SF, 27 Sep 2005 (MR; RDB, BKH†; 2005-204) was seen on the ground and subsequently chased into a net, furnishing a first record for this well-worked island. A color photo was published in *N. Am. Birds* 60:175. The banders noted the bird's vestigial 10th primary (identifying it as a sylviid warbler) and the spike-tipped secondaries, which eliminate all species of *Phylloscopus* other than the Arctic and the Greenish Warbler (*P. trochiloides*). The Greenish, which breeds from northeast Europe to western China and winters from India to Thailand (Clements 2000) but has not occurred in the Western Hemisphere, is eliminated by the streaked auriculars and long, flaring supercilium. This individual was fairly bright with a small bill (exposed culmen 9.8 mm, bill depth 2.9 mm), measurements suggesting the Alaska-breeding *P. b.*

kennicotti. California has three prior records 13 Sep–1 Oct; one from Prince Patrick Island, Northwest Territories, 21 Jul 1949 (Godfrey 1986) and one from the Vizcaíno Peninsula of Baja California Sur 12 Oct 1991 (Pyle and Howell 1993) are the only other North American records of the Arctic Warbler away from Alaska.

WOOD THRUSH *Hylocichla mustelina* (21, 3). One singing male at Chalk Mt., SCZ, 16 Jun 2005 (DLS§; 2005-075) was seen only briefly but both its song and chattering call notes were nicely recorded with a hand-held tape recorder. Two records of fall migrants included one at the San Francisco Presidio, SF, 20 Oct 2005 (MDB‡; CL, LML‡; 2005-141) and a very cooperative and photogenic first-fall bird at Waller Park, Santa Maria, SBA, 10–12 Nov 2005 (JMG†, LC; JMC, DMC, DF†, GMcC, MMe†, NL, BKS†; 2005-152; Figure 10); another photo of the last is in *N. Am. Birds* 60:140. These are the first records for both Santa Cruz and Santa Barbara counties.

RUFOUS-BACKED ROBIN *Turdus rufopalliatus* (14, 1). One at the headquarters of the Wister Unit of the Imperial W. A. near Niland, IMP, 21 Dec 2005–20 Jan 2006 (TaE; LWC, JLD, ToE, MTH†, LaH, OJ, ELK†, KZK†, KHL†, CAM, GMcC, CMcG†, MMe†, BM†, MSanM, TRS†, DVP; 2005-198) was the first for the Salton Sink (Patten et al. 2003); the three previous Imperial County records are from the Colorado R. A photograph of this bird appeared in *N. Am. Birds* 60:320.

EASTERN YELLOW WAGTAIL *Motacilla tschutschensis* (14, 2). One in its first fall at Abbott's Lagoon, MRN, 7–8 Sep 2004 (SJ; NF, KH‡, SNGH†, KK; 2004-139) was the third recorded at this location. Another in its first fall was along the beach at MacKerricher State Park, Fort Bragg, MEN, 16–17 Sep 2005 (GC, RJK, RL†, CL, LML‡, RST, JRW; 2005-118; Figure 11), with a photo also published in *N. Am. Birds* 60:135.

Figure 10. Three Wood Thrushes (*Hylocichla mustelina*) in California in 2005 were more than average. This individual, in its first winter as attested by the whitish spots on the tips of the greater coverts, was at Santa Maria, Santa Barbara County, 12 Nov 2005.

Photo by Dave Furseth

With the split of the Eastern from the Western Yellow Wagtail (*M. flava*) in 2004 (Banks et al. 2004), the CBRC was faced with a new and intractable identification issue. *Motacilla tschutschensis* now comprises subspecies *tschutschensis* and *simillima* (Banks et al. 2004). Alström and Mild (2003) subsumed *M. t. simillima* (recognized by Gibson and Kessel 1997) in *tschutschensis* and included *M. t. taivana* (not specifically discussed by Banks et al. 2004) as a subspecies of the Eastern. These three subspecies of Eastern include *plexa*, *angarensis*, and *zaissanensis* as synonyms (Banks et al. 2004), though others have synonymized *plexa* with *thunbergi* (a subspecies of the Western Yellow Wagtail). In Alaska, *tschutschensis* is the common breeder, while *simillima* is an uncommon migrant on the w Aleutians (Gibson and Kessel 1997, Heindel 1999, T. G. Tobish pers. comm.), a rare to casual spring migrant on the Pribilof Islands (G. Beiber pers. comm.), and casual on St. Lawrence I. In lack of a specimen, neither subspecies has been identified conclusively in North America outside of Alaska (Heindel 1999).

Heindel investigated these wagtails' identification. While adults in breeding plumage should be identifiable to species and subspecies (see Alström and Mild 2003), winter adults and immatures are far more difficult to identify. The 14 California records to date are in the fall (27 Aug–21 Sep) and all apparently pertain to first-fall birds, which cannot be reliably identified to species, in many cases even with a specimen. California records have primarily been of grayish birds with white breasts, a pattern that Alström and Mild (2003) noted can occur in all subspecies but is common only in *beema* and *feldegg* within the Western Yellow Wagtail and *tschutschensis* (including *simillima*) and *taivana* within the Eastern Yellow Wagtail. The prominent supercilium shown by

Figure 11. All Yellow Wagtails recorded in California have resembled this bird with its prominent supercilium, grayish body plumage, and whitish breast—features consistent with the expected Eastern Yellow Wagtail (*Motacilla tschutschensis*). Although some subspecies of the Western Yellow Wagtail (*Motacilla flava*) are indistinguishable in the corresponding plumage from birds such as this one, since the 2004 split the CBRC has been content to consider California records to pertain to the geographically probable Eastern Yellow Wagtail. Photographed 17 September 2005 at MacKerricher State Park, Mendocino County.

Photo by Ron LeValley

California birds further helps to eliminate other subspecies, including *thunbergi*. However, while all California records are consistent with the Eastern (either *tschutschensis* or *simillima*), none can eliminate the Western conclusively. The committee informally follows Alström and Mild (2003) as the authority on this genus, and their repeated statements cautioning uncertainties in the identification of birds in this complex leads us to take a conservative approach.

At its 2006 annual meeting the committee voted to provisionally consider all accepted California yellow wagtails to be the Eastern, given that species' abundance in Alaska, the lack of records of the Western from North America (Banks et al. 2004), and these birds' almost exclusively west-coast pattern of vagrancy: single accepted records of the Yellow Wagtail (*sensu lato*) from Alabama (29 Sep 2003; *N. Am. Birds* 58:92, McConnell 2006, Duncan and Duncan 2006) and Nevada (Cressman et al. 1988) are the sole exceptions.

SPRAGUE'S PIPIT *Anthus spragueii* (84, 6). This species was again found in various farm fields between Calipatria and Niland, IMP. Accepted records from this area are of three on 19 Feb 2005 (RST; MB; 2005-052), one 13 Nov–10 Dec 2005 (GMcC; 2005-155), and one on 20 Dec 2005 (TaE†; GMcC; 2005-197). As discussed by San Miguel and McGrath (2005) and Cole et al. (2006), Sprague's Pipit is now known to be regular in fields of Bermuda Grass (*Cynodon dactylon*) in the Imperial Valley. Although the committee has not accepted any Imperial Valley Sprague's Pipits as returning birds, it seems likely that some records pertain to returnees. One on Santa Barbara I., SBA, 24 Sep 2005 (NL; 2005-130) was early but seen well both in flight and on the ground and gave diagnostic call notes. One at Goleta, SBA, 21–22 Sep 1984 (1984-242, Dunn 1988) represents the only other record before October. See also records not accepted, identification not established.

BLUE-WINGED WARBLER *Vermivora pinus* (38, 3). One at Furnace Cr. Ranch, Death Valley National Park, INY, 30 May 2004 (ToE, KNN; 2004-089) was accepted 9–1 after three rounds of circulation; the lone detractor was concerned over the brevity of the observation and less than complete details. A one-year-old female was banded near Hayfork, TRI, 7 Jul 2005 (LOM†, JR†; 2005-093), and a male was at Mt. Davidson, SF, 10 Sep 2005 (MDB, DA; 2005-112). The bird in Trinity County was in wing molt, and its fresh greater coverts were tipped with yellow-whitish. Although yellowish wingbars can be a sign of hybridization with the Golden-winged Warbler (*V. chrysoptera*), some apparently pure Blue-winged Warblers share this feature (Dunn and Garrett 1997). This bird had no other signs of hybridization with the Golden-winged, and the record was accepted unanimously on its first round.

GOLDEN-WINGED WARBLER *Vermivora chrysoptera* (68, 1). A male at DeForest Park, Long Beach, LA, 28–29 May 2005 (KGL; DBe†, KLG; 2005-067) was the first recorded since 2002. Declines in this species have continued throughout its range, and its frequency in California appears to be decreasing concordantly.

YELLOW-THROATED WARBLER *Dendroica dominica* (108, 3). A singing male *D. d. albilora* was at Bishop, INY, 17 Jun 2005 (D&JP; CH, JLD; 2005-077). One at Lebec, KER, 26 Apr 2005 (WW; 2005-058) was early and at a location not known for vagrants, while another early one at Butterbredt Spring, KER, 17 Apr 2005 (RHu; 2005-068) was at a more typical location and identifiable as the expected subspecies *albilora*. See also records not accepted, identification not established.

GRACE'S WARBLER *Dendroica graciae* (48, 4). Four Grace's Warblers converged on Fort Rosecrans National Cemetery, Pt. Loma, SD, over the winter of 2005–06. A returning adult male was back for his fifth winter 18 Sep 2005–12 Mar 2006 (GMcC; MTH†, VM†; 2005-119), and an adult female returned for her third winter 20 Sep 2005–15 Apr 2006 (GMcC, MTH†; PAG; 2005-125). New birds included a female 22 Sep 2005–12 Mar 2006 (WTH; MTH†; 2005-146) and a male present at least

12 Nov 2005 (MTH†; 2005-165). A color photo of 2005-125 was published in *N. Am. Birds* 60:176. A Grace's at Del Mar, SD, 22 Dec 2005 (MJB; 2005-211) was judged to be the same bird present in the winters of 2001–02 and 2002–03 (Garrett and Wilson 2003, San Miguel and McGrath 2005). Another at Torrey Pines State Reserve, near Del Mar, SD, 29 Sep 2005 (GBG; 2005-128) was presumably a fall migrant rather than a wintering bird. A singing male was at Charlton Flat, San Gabriel Mts., LA, 13–14 May 2005 (DK, JFa; SS†; 2005-059). See also records not accepted, identification not established.

PINE WARBLER *Dendroica pinus* (73, 2). One fairly bright bird at Mile Square Park, Fountain Valley, ORA, 17–18 Nov 1998 (JEP; 2006-041) was first submitted to the committee in 2006. A male at El Dorado Park, Long Beach, LA, 2 Jan–3 Mar 2005 (KSG†; OJ, MSanM†; 2005-001) was thought possibly to be a returning bird; this park has hosted Pine Warblers over the past several winters.

WORM-EATING WARBLER *Helmitheros vermivorum* (101, 2). One at Santa Barbara Cemetery, Montecito, SBA, 2 Jan–15 Mar 2005 (BKH; DMC, PAGa, JMG†, MJI, OJ; 2005-024) was found on the local Christmas Bird Count; its photo is in *N. Am. Birds* 59:326. Another along Carpinteria Cr., Carpinteria, SBA, 25 Aug 2005 (RAH; JLD; 2005-108) was discovered during the American Ornithologists' Union conference.

CONNECTICUT WARBLER *Oporornis agilis* (100, 5). At Southeast Farallon I., SF, one in its first fall was banded 3 Sep 2005 (BKH†; MB; 2005-205), one was seen 14 Sep 2005 (MB; 2005-206), and one was banded 22 Sep 2005 (MB; BKH†; 2005-207). Southeast Farallon I. claims over 50% of California's records. One first-fall female banded near Bolinas, MRN, 7 Sep 2005 (DiH, LJ†; 2006-046) was on the mainland adjacent to the Farallones. Inland, one at Inyokern, KER, 19–20 Sep 2000 (SSt; 2005-168) was described well and seen walking— behavior diagnostic within the genus *Oporornis*. See also records not accepted, identification not established.

MOURNING WARBLER *Oporornis philadelphia* (130, 3). At Southeast Farallon I., SF, a first-fall female was banded 7 Sep 2005 (MB†; 2005-208) and another individual in its first fall was seen 9 Sep 2005 (MB; 2005-209). Despite being well past the species' September peak, one at Sand Dune Park, Manhattan Beach, LA, 24–25 Oct 2005 (DBe; KGL; 2005-178) was seen and heard calling, eliminating MacGillivray's Warbler (*O. tolmiei*), and was accepted on the first round. See also records not accepted, identification not established.

RED-FACED WARBLER *Cardellina rubrifrons* (20, 6). Six Red-faced Warblers in 2005 made a record-high annual total. The first were two singing males (one heard only) on Clark Mt., SBE, 29 May 2005 (CC†; 2005-065), a location where the species has summered once before. Another singing male at William Heise County Park, near Julian, SD, 6–12 Aug 2005 (MJB†, PAG, AEK, OJ†, GMcC, MS†, SES, RST; 2005-098) may have summered at this location; a photo is in *N. Am. Birds* 59:692. Three other individuals were more likely fall migrants, including one in a yard at El Segundo, LA, 22 Aug 2005 (J&KD†; 2005-120), one at Del Valle Regional Park, ALA, 11 Sep 2005 (SH; 2005-114), and one in its first fall at Canyon Park, Costa Mesa, ORA, 14–15 Sep 2005 (RAH; RC†, PC†, JLD, MJI†; 2005-166). The Alameda County sighting was especially noteworthy for being so far north. The record for Orange County was the first for that small but intensely birded county. The birds in San Diego, Alameda, and Orange counties seemed to prefer live oaks (*Quercus* sp.).

SCARLET TANAGER *Piranga olivacea* (134, 3). One female at Banning Park, Wilmington, LA, 12–13 Nov 2005 (TEW; KGL, MMT†; 2005-159) and one at the South Coast Botanical Garden, Palos Verdes Peninsula, LA, 13 Nov 2005 (KGL; 2005-179) were within the species' expected fall peak (mid-October–mid-November).

A singing male at Mason Regional Park, ORA, 11 Jun 2005 (DL†; 2005-091) was clearly an adult by virtue of its all black wings; it made only California's second spring record of an adult male. One-year-old males are far more expected in California in spring and are easily aged by the brownish cast to their primaries and secondaries. See also records not accepted, identification not established.

CASSIN'S SPARROW *Aimophila cassinii* (47, 1). A singing male near the intersections of Latrobe Rd. and Michigan Bar Rd. in Deer Cr. Hills Preserve, SAC, 21–30 May 2005 (EPa; SA†, KB, RHa†, EDG†, JCS§, MJM, JM†, DEQ†, SR†; 2005-061) was a first for the Central Valley and the northernmost for California in spring. Other northern California records are split between spring and fall and have hailed primarily from Southeast Farallon I. (12), but there are two coastal records (Marin and Humboldt counties) and a June 1984 record from Mono County (Dunn 1988).

Pandolfino (2005) discussed the Sacramento County bird in more depth and noted that a wet spring may have contributed to lusher conditions favored by Cassin's Sparrow—previous years that have been good for it in California have also had above-average rainfall (e.g., 1978). There are no subspecies recognized in Cassin's Sparrow, but the songs of the Arizona and Texas populations differ on average, as discussed by Borror (1971); Pandolfino (2005) believed that the song suggested that the Sacramento bird may have come from the Texas population.

FIELD SPARROW *Spizella pusilla* (8, 1). A singing male at Blue L., HUM, 11–17 Jul 2005 (KB; RFo†, KR; 2005-085) was extensively gray, consistent with the more westerly *S. p. arenacea*, which has probably accounted for all other California records. For the seven days of its stay it held a territory on a brushy gravel bar adjacent to the Mad R. vegetated primarily with willows (*Salix* spp.) . It was the first Field Sparrow recorded as singing in California, although there is one prior midsummer record, of one banded on Southeast Farallon I., SF, 17 Jun–9 Jul 1969 (Roberson 1986). The other six previous California records range in date from 16 October to 12 April, and the four Arizona records range from 14 Oct to 2 Mar (Rosenberg and Witzeman 1999, Rosenberg, 2001, Arizona Bird Committee data).

LE CONTE'S SPARROW *Ammodramus leconteii* (33, 1). One at China Ranch, INY, 11 Oct 2005 (JEP; 2005-148) showed no signs of immaturity. While many first-fall Le Conte's Sparrows still retain some juvenal plumage by this date, others molt early and may be in full first basic plumage (safely aged only by skull pneumatization or condition of the ovary) as early as 11 October (Pyle and Sibley 1992, Pyle 1997), such as ones on Southeast Farallon I., SF, 13 Oct 1970 (Dunn 1988) and 11–12 Oct 1986 (Langham 1991, Pyle and Sibley 1992).

*NELSON'S SHARP-TAILED SPARROW *Ammodramus nelsoni* (30**, 2). We located two old specimens, photographing them for the committee's files. One in its first fall collected at Seaside, MTY, 18 Oct 1921 (MH†; #FMNH 167975; 2005-144) is in poor condition but still clearly identifiable. One adult at Milpitas, SCL, 6 May 1891 (JD†, MJI†, Barlow 1900; #USNM 120310; 2005-143) was the type specimen for *Ammodramus caudacutus becki* (Ridgway 1891). This name was synonymized by Dwight (1896), who correctly identified the specimen as *A. n. nelsoni*, the only subspecies of Sharp-tailed Sparrow known from California. Barlow (1900) reported the bird as a male, but the specimen tags do not identify its sex. The committee reviews records of Nelson's Sharp-tailed Sparrow through 1986.

SMITH'S LONGSPUR *Calcarius pictus* (7, 1). A male with a large flock of longspurs near the Calipatria State Prison, IMP, 20 Dec 2005–17 Feb 2006 (ToE; TRC, JLD, RFo†, OJ, KHL, CAM, GMcC, BM†, RJN, D&JP, SS†, DVP; 2005-196) had its photo published in *N. Am. Birds* 60:286. Most previous California records are of fall migrants (14 Sep–31 Oct), either inland (2 records) or along the coast (3 records), but there is precedent for wintering in the Salton Sink: one near Calipatria 31 Dec

2001–12 Feb 2002 (Garrett and Wilson 2003). In addition to the one Smith's, the flock in 2005–06 contained up to 15 McCown's (*C. mccownii*), 25 Lapland (*C. lapponicus*), and 300 Chestnut-collared (*C. ornatus*) longspurs (*N. Am. Birds* 60:286), as well as a large number of Horned Larks (*Eremophila alpestris*).

SNOW BUNTING *Plectrophenax nivalis* (109, 4). A small flock on the spit of Big Lagoon, HUM, 12 Dec 2005–9 Feb 2006 included three on 12 Dec, two on 19 Jan, and one on 9 Feb (TWL†; 2006-029). One at San Clemente I., LA, was photographed 3–14 Nov 2004 (JMM†; 2005-004) in the precise area where one was observed 15 Nov 2003–27 Feb 2004 (2004-013; San Miguel and McGrath 2005). Record 2005-004 circulated twice through the committee for consideration of the possibility that the two records referred to the same bird. Despite the excellent photos, the bird's age could not be determined with certainty, although some members thought it was most likely in its first fall. After two rounds the committee concluded it was more likely a different bird, citing this species' lack of winter site-fidelity, the tentative age as young, and the six records for the nw Hawaiian Is. (R. Pyle pers. comm). The lone dissenter felt that the unprecedented nature of the record and the fact that a first-fall male had successfully wintered the previous year tipped the scale towards a returning bird. Other than those on San Clemente I., just one Snow Bunting has occurred south of Monterey and Inyo counties: one at Kelso Valley, KER, 23–27 Dec 1978 (Luther et al. 1983). See also records not accepted, identification not established.

PYRRHULOXIA *Cardinalis sinuatus* (23, 1). A female at Fairview Developmental Center, Costa Mesa, ORA, 7 Feb–13 Mar 1999 (JM, JDW†; 1999-078A) had previously been considered "not accepted, identification accepted but natural occurrence questionable" (Garrett and Wilson 2003). It was re-reviewed and accepted in light of the species' emerging pattern of vagrancy, summarized by Patten (2006) shortly after acceptance of this record. After three rounds, two members continued to question the bird's natural occurrence, noting that it had an abraded tail with a broken rectrix, that the species has been found in small numbers in Mexican markets (Hamilton 2001), that the location was a suburb with poor habitat for the species and a sizable Latin-American population which may keep wild-caught cagebirds, and that the winter date is not consistent with other CBRC-accepted *coastal* records. Supporters of vagrancy pointed to increasing evidence for the Pyrrhuloxia's dispersal north of its normal range in Texas and on the Great Plains (primarily spring and winter; Lockwood and Freeman 2004, Patten 2006) and the pattern of winter dispersal away from breeding areas in Mexico, Arizona, and New Mexico (Monson and Phillips 1981, Patten 2006).

*PAINTED BUNTING *Passerina ciris* (107, 1). One female at a feeder in Arcata, HUM, *11*–15 Dec 2004 (KR†; 2004-215) inspired two rounds of debate over its natural occurrence. The bird's being an adult (according to P. Pyle), 11 days later than the latest previously accepted record, so far to the north, and at a feeder were causes of concern for some members. But the majority responded that December was within the expected fall window for many other passerines (e.g., Scarlet Tanager) and that the Painted Bunting should not be treated differently. Some members believed that the north-coast locale strengthened the record (being away from urban centers of southern and central California), and others pointed out the species' well-established pattern of *winter* vagrancy along the east coast, which involves primarily birds found at feeders (see Mlodinow and Hamilton 2005). The committee reviews Painted Buntings through 2004.

COMMON GRACKLE *Quiscalus quiscula* (72, 3). One male at the rest area on Interstate 80 w of American Canyon Rd. near Vallejo, SOL, 10 Oct 2004 (DBr†; 2004-161) was earlier than most records. Another male in a flock of blackbirds near Cuesta College, San Luis Obispo, SLO, 27 Nov–22 Dec 2005 (TME, DML†, CAM, GPS†, BKS, DVP, RST†; 2005-164) was the first for San Luis Obispo County. One

female was in the Tijuana R. valley, SD, 17 Dec 2005–26 Feb 2006 (GMcC; TAB†, TRC, MUE†, PAG, MTH†, LaH, OJ†, CAM, DP, MS†, MSanM, MBS†, LST†; 2005-190), only San Diego County's fifth. A photo of the San Diego bird is published in *N. Am. Birds* 60:284. Like all Common Grackles in California to date, all three of these appeared to be of the more westerly subspecies, *Q. q. versicolor* (Bronzed Grackle).

BLACK ROSY-FINCH *Leucosticte atrata* (13, 1). A female collected at Westgard Pass, INY, 11 Nov 1972 (EAC#, SWC#; GB†; #SBCM 38139; 2006-018) was reviewed in 2006. The specimen's label notes that an adult male Black Rosy-Finch was observed in the same flock on the same date, but there is no documentation, and the committee did not review this report. See also records not accepted, identification not established.

COMMON REDPOLL *Carduelis flammea* (77, 1). A dull-plumaged bird among a flock of American Goldfinches (*C. tristis*) at the Dakin Unit of Honey L. W. A., LAS, 4 Jan 2005 (TMa; 2005-009) was beautifully sketched, eliminating the possibility of the improbable Hoary Redpoll (*C. hornemanni*).

RECORDS UPGRADED FROM STATISTICALLY ACCEPTED TO ACCEPTED

EMPEROR GOOSE *Chen canagica* (83, 0). Eight specimens that had previously been statistically accepted (Cole et al. 2006) were located and photographed by Cole and are thus upgraded from statistically accepted to fully endorsed by the committee:

First-fall male, Colusa, COL, Nov 1912 (no exact date; LWC†, Bryant 1914; #MVZ 24508; 2004-504)

First-fall, sex undetermined, Rio Vista, SOL, ca. 1921 (LWC†; #MVZ 59137; 2004-509)

First-spring, sex undetermined, Humboldt Bay, HUM, 1 Mar 1925 (LWC†, Grinnell 1931, Zerlang and Fraser 1931; #MVZ 52036; 2004-510)

First-fall, sex undetermined, Humboldt Bay, HUM, 3 Dec 1927 (LWC†; #MVZ 57187; 2004-512)

First-fall, sex undetermined, Limantour, MRN, 13 Dec 1928 (LWC†, Orr 1944; #CAS 43715; 2004-514)

First-fall, sex undetermined, near McArthur, SHA, 20 Jan 1930 (LWC†, Grinnell 1931, Grinnell and Miller 1944; #MVZ 54483; 2004-515)

First-fall male, Humboldt Bay, HUM, 27 Jan 1933 (LWC†; #MVZ 71275; 2004-517)

One, sex undetermined, Willows, GLE, 20 Dec 1932 (LWC†, Beck 1934; #MVZ 63663; 2004-518). Grinnell and Miller (1944) erroneously listed the date as 20 Dec 1933.

PIPING PLOVER *Charadrius melodus* (3, 0). The submission of a photo taken 10 Apr 1972 upgrades the record of a Piping Plover returning to Goleta, SBA, for the second of its three winters, 16 Dec 1971–22 Apr 1972 (BKS†; 2004-531), from statistically accepted to accepted. A published photo appears in *Am. Birds* 26:525.

SKY LARK *Alauda arvensis* (1, 0). One at Pt. Reyes, MRN, 31 Oct 1982–29 Jan 1983 (AG†; 2004-546) had previously been statistically accepted (Cole et al. 2006) but was fully accepted by the CBRC with the submission of a photo taken 11 Nov 1982. This individual, consistent with the migratory *A. a. pekinensis*, returned for seven consecutive winters from 1978–79 through 1984–85 and was discussed in detail by Morlan and Erickson (1983).

RECORDS NOT ACCEPTED, IDENTIFICATION NOT ESTABLISHED

TRUMPETER SWAN *Cygnus buccinator*. Three on Nicasio Reservoir, MRN, 6–26 Feb 2005 (2005-033) were believed by most of the committee to be Tundra Swans (*C. columbianus*). One flying overhead with Tundra Swans at Sacramento, SAC, 13 Nov 2005 (2005-154) was glimpsed in the moonlight and identified solely by call. Most members were uncomfortable with the identification of a night flyover by call alone, and some members commented that even if the identification was correct, the lack of a clear sighting does not eliminate the possibility of a neck-ringed bird from an introduced population not yet established.

WHOOPER SWAN *Cygnus cygnus*. A swan with extensive yellow on the bill at the Lower Klamath N.W.R., SIS, 7 Feb–13 Mar 2004 (2005-023), and a similar or the same swan there 28 Nov 2004–6 Mar 2005 (2006-079), appeared to be too small for the Whooper, suggesting it may have been a hybrid Whooper × Tundra Swan (*C. columbianus*), or possibly a Bewick's Swan (*C. columbianus bewickii*). Additional and more detailed documentation would have been most helpful.

GARGANEY *Anas querquedula*. One female reported from Humboldt Bay N.W.R. at the s end of Humboldt Bay, HUM, 4–6 May 2004 (2004-063) generated three rounds of debate. Observers arriving the next day found a Green-winged Teal (*A. crecca*), which caused considerable confusion. Although the original observers were experienced, the committee was concerned that the bird was not photographed and that several Green-winged Teals have been misidentified recently as the Garganey.

YELLOW-BILLED LOON *Gavia adamsii*. Although this species reaches California annually and is usually a straightforward identification if seen well, the committee still requires a description that covers the key identification features. Three reports were rejected for not meeting these criteria, of single birds at Morro Bay, SLO, 16 Jan 2005 (2005-007), Fields Landing on Humboldt Bay, HUM, 9 Feb 2005 (2005-029), and Pt. Piedras Blancas, SLO, 17–19 May 2005 (2005-078).

SOLANDER'S PETREL *Pterodroma solandri*. A *Pterodroma* photographed at 40.02° N, 128.01° W, 173 n. miles w of Cape Mendocino, HUM, 9 Aug 2005 (2005-104), not 8 Aug as published (*N. Am. Birds* 60:134), may have been this species but received only one vote for acceptance. The one committee member supporting the identification was also the reporting observer and acknowledged that some of the members' problems with the identification were insurmountable with current knowledge. Pyle (2006) published a photo and brief discussion. The bird appeared broad-winged and thick-set in the field and showed extensive white on the face extending above the bill, characters favoring Solander's over Murphy's Petrel (*P. ultima*) or other dark Pacific species of *Pterodroma*. The majority of the committee believed that the photos were too distant to confirm the identification, especially since this bird did not show the bold white crescents on the under-primary coverts or obvious hooded effect typical of most Solander's. However, Pyle (2006) noted that these characters may vary with age and the California record may pertain to a subadult Solander's. Although some early sightings of dark *Pterodroma* petrels off California were reported as Solander's (see Bailey et al. 1989), the species remains unconfirmed for North America (AOU 1998). However, 12–18 were seen and photographed within 180 n. miles of Alaskan waters on 23 Sep 2006 (Iliff, T. G. Tobish et al., unpubl. data), and others have been suspected but not conclusively identified within North American waters (M. Force pers. comm.). Solander's Petrel is a species to be watched for off California.

PARKINSON'S PETREL *Procellaria parkinsoni*. One seen briefly at dawn by at least three participants on an organized long-range pelagic trip off southern Califor-

nia at 32° 00' N, 120° 30' W, off Santa Barbara I., SBA, 8 Sep 2005 (2005-217) received no support.

BULWER'S PETREL *Bulweria bulwerii*. A bird identified as this species was seen 30 miles s of San Clemente I., LA, 4 Sep 2003 (2003-169). The accounts and descriptions by three observers were reviewed by 14 members as it circulated through the committee four times between March 2004 and August 2006. The bird was seen for about one minute late on the first day of a multi-day deepwater pelagic trip by the *Searcher*. Observers with extensive experience with both Bulwer's and Jouanin's (*B. fallax*) Petrels were solicited for opinions; respondents replied that the two can be distinguished readily and that the described size and manner of flight of the bird reported 4 Sep 2003 better matched those of Bulwer's. Support for the record was strong, and, even in the end, the two members declining support believed the bird was probably a Bulwer's Petrel. Both, however, believed the level of documentation was inadequate to support the second record for the western United States. The only prior record for California is of one in Monterey Bay, MTY, 26 Jul 1998 (1998-119; Erickson and Hamilton 2001).

BROWN BOOBY *Sula leucogaster*. Although the Brown Booby has occurred annually on Southeast Farallon I., SF, over recent years, the report of one there 14 Sep 2004 (2004-191) did not meet the committee's level for acceptable documentation.

YELLOW-CROWNED NIGHT-HERON *Nyctanassa violacea*. An immature seen only in flight at Terrace Pt., SCZ, 19 Jun 2005 (2005-095) failed to gain any committee support.

GLOSSY IBIS *Plegadis falcinellus*. A *Plegadis* about 7 miles wnw of Calipatria, IMP, 8 Jul 2000 (2003-205) was not accepted as a Glossy; ibis identification is difficult unless one has excellent views of a bird in alternate plumage. We ask that observers use caution in identifying ibises and note, if possible, the bird's age, state of molt, and soft-part coloration.

COMMON BLACK-HAWK *Buteogallus anthracinus*. With the acceptance of a Common Black-Hawk near Santa Rosa, SON, through the summer of 2005 (see above) and the rumored presence of this same bird there in previous summers, the committee took a second look at the documentation for one reported from Santa Rosa on 14 Oct 2000 (2000-156A), previously reviewed as 2000-156 (McKee and Erickson 2002). The record received some support, but the majority of the members still found the documentation inadequate to eliminate the possibility of a Zone-tailed Hawk (*B. albonotatus*), especially since the described descending call seemed to fit that species better. One near Blythe, RIV, 22–25 Jan 2005 (2005-011) was described as feeding on the edges of pools of water in a streambed, consistent with a black-hawk. It received some support from the committee, but most members believed that the photos more closely resembled a *Buteo*, possibly a Zone-tailed Hawk. One reported near Barnwell in the East Mojave Preserve, SBE, 21 May 2005 (2005-066) received no support from the committee.

CRESTED CARACARA *Caracara cheriway*. One over El Centro, IMP, 9 Nov 2005 (2005-151) received considerable support from the committee but failed on the third round because the bird was seen only briefly, in flight, and its wings were described as being held in a dihedral. Although El Centro would be a perfect spot for a vagrant caracara, more complete details were needed.

GYRFALCON *Falco rusticolus*. One reported from Honey L. W. A., LAS, 7 Feb 2005 (2005-027) generated considerable discussion. The committee was split, as many of the features described did sound correct for this species, but the details fell short of what the majority of members required for such a rarity.

AMERICAN GOLDEN-PLOVER *Pluvialis dominica*. A golden-plover photographed in Castroville, MTY, 20 Oct 2005 (2005-145) was clearly an adult and believed by most of the committee to be a Pacific (*P. fulva*). The American was added to the CBRC's review list because many members believed that some Pacifics were being misidentified and published as Americans, distorting the true status of the American in California. The committee is not aware of any adult American Golden-Plover adequately documented in California in fall migration.

COMMON GREENSHANK *Tringa nebularia*. The committee had previously reviewed and not accepted the report of one in Chico, BUT, 1 Dec 1993 (1995-004A) (Erickson and Terrill 1996). Since it has recently accepted this species (2001-137, 2002-174; Garrett and Wilson 2003, Cole and McCaskie 2004), it gave the report from Chico a second review. While they found the report intriguing, most members still believed there was not enough detail to support what would be the first record for California and the contiguous 48 states.

ICELAND GULL *Larus glaucoides*. A pale first-winter gull reported by a single observer near Mountain View, SCL, during the Palo Alto Christmas Bird Count of 17 Dec 2001 (2003-087) and a similarly plumaged gull at the Salinas R. mouth, MTY, 18 Jan 2003 (2003-088) may both have been Iceland Gulls, but the documentation was inadequate to eliminate pale Thayer's Gulls (*L. thayeri*) or, with the bird near Mountain View, even a leucistic gull of another species.

LONG-BILLED MURRELET *Brachyramphus perdix*. A report from Waddell Bluffs, SCZ, 19–25 Aug (2003-151) received considerable support but was not accepted. Although the Long-billed Murrelet seems to be appearing with some regularity off the n California coast from July to October, the committee has been conservative about endorsing records since juvenile Marbled Murrelets (*B. marmoratus*), Common Murres (*Uria aalge*), or Pigeon Guillemots (*Cepphus columba*) may present problems for birds not seen well or for birders inexperienced with alcids.

SNOWY OWL *Bubo scandiacus*. One at Sunnyvale, SCL, 4–5 Jan 1974 (2005-030) was documented only with a very brief description composed decades after the observation. While the committee was pleased to have documentation on file for this record, and while 1973–74 was an invasion year for the Snowy Owl (over 35 accepted records), the record failed primarily because of the lack of a complete, contemporary description of the bird.

YELLOW-BELLIED FLYCATCHER *Empidonax flaviventris*. The report of one at the fish docks, Pt. Reyes, MRN, 2–10 Oct 2004 (2004-153) received only minimal support. Call notes heard on 2 October were reportedly consistent with the Yellow-bellied, but a video taped that day was of quality insufficient to confirm the identification. Some photos taken 3 Oct 2004 show a bright Hammond's Flycatcher (*E. hammondi*), while others show a bird more consistent with a Pacific-slope Flycatcher (*E. difficilis*). In the end, the original observers retracted the 2 Oct sighting, since it was clear that much confusion surrounded this record. Another first-fall *Empidonax* banded, measured, and photographed in hand at Starr Ranch Audubon Sanctuary, ORA, 18 Oct 2005 (2005-213) was especially intriguing (Figure 12). Almost all members commented that it looked perfect for the Yellow-bellied, with a complete narrow yellow-tinged eye ring, bright yellow throat and upper breast, rounded head, and very blackish wings contrasting sharply with the wingbars and wing edging. It probably would have been accepted as a Yellow-bellied had the bird not been measured—the reported measurements included a wing chord of 63 mm, tail length of 56 mm, longest secondary 54 mm, and primary 6 of 58 mm. From measurements in Pyle (1997), the wing chord falls in the overlap zone between the Yellow-bellied and Western (*E. difficilis/occidentalis*), the difference between the longest primary and primary 6 rules the Yellow-bellied in and rules the Western out,

Figure 12. Most of the committee agreed that this bird, banded 18 October 2005 at Starr Ranch Audubon Sanctuary, Orange County, showed the classic field marks of a Yellow-bellied Flycatcher (*Empidonax flaviventris*). Measurements were inconsistent with that species, however, and no member was comfortable endorsing a record of an *Empidonax* with inconsistent measurements.

Photo by Becky Stewart

and the tail is only 1 mm longer than the extreme for Yellow-bellied, but wing length minus tail length (7 mm) strongly favors the Western (6–15 mm) over the Yellow-bellied (12–19 mm). Unfortunately no other measurements were taken (bill length and width and primary 10 minus primary 6 would have been helpful). In the end no committee member could support the identification with measurements outside of the range of the Yellow-bellied, and members suggested that this bird may have been measured improperly, a very problematical Western (demanding extreme caution for a silent bird identified in the field), or possibly even a hybrid from the contact zone in western Canada. As always, the committee stresses that reports of vagrant *Empidonax* need extreme detail, including description of voice, age, primary spacing, general appearance, overall coloration, and behavior.

DUSKY-CAPPED FLYCATCHER *Myiarchus tuberculifer*. The call described for one at El Dorado Nature Center, Long Beach, LA, 20 Dec 2004 (2005-037) left doubt among several committee members, and the brief description provided little additional support.

WHITE-EYED VIREO *Vireo griseus*. One reported from Montaña de Oro campground, SLO, 24 Sep 2005 (2005-127) was seen briefly, described incompletely, and received only minimal support from the committee.

BLUE-HEADED VIREO *Vireo solitarius*. The report of one at Owl Canyon, Bodega Bay, SON, 24 Sep 1999 (2005-166) met with little support. Unusually bright Cassin's Vireos (*V. cassinii*) are a source of concern for the committee, and reports of the Blue-headed that do not note the bright white throat, head–back contrast, and tail pattern do not fare well.

YELLOW-GREEN VIREO *Vireo flavoviridis*. One at Boulder Oaks, SD, 6 Sep 2004 (2004-131) was atypically far inland, would tie the earliest date for California, and would have been one of only four prior to 20 September. The description mentions a "dark" eye, does not describe the yellow extending onto the sides of the neck, and does not stress heft or bill size. Most committee members were concerned that the Red-eyed (*V. olivaceus*) and a bright Warbling (*V. gilvus*) were not fully eliminated by the description. Supporters of the record noted that the submitted sketch was a good facsimile of the claimed species and that the noting of a pink base to the mandible, a little-known field mark, indicated the identification was likely correct.

VEERY *Catharus fuscescens*. The report of one silent individual at the fish docks, Pt. Reyes, MRN, 1 Oct 2004 (2004-151) failed after three rounds of circulation. It consisted of written descriptions and many photos, but most discussion centered on the photos. Detractors believed the photos showed a Russet-backed Swainson's Thrush (*C. u. ustulatus* group of subspecies),particularly because of the appearance of a complete, bold, buffy eye ring in the majority of the photos. Also disfavoring the Veery, the flanks seemed brownish, the breast spotting seemed too dark, the back color was not rich enough, the eye ring seemed too bold, there was too much wing contrast, and there was the suggestion of a buff half collar. Even if the pictures were off, they opined, evidence to support the identification was insufficient. At least two members, one of whom had seen the bird in the field, strongly believed that the bird had been identified correctly, citing the descriptions that mentioned the gray flanks and minimal breast spotting. Furthermore, they stated that pictures were taken with an inadequate camera and looked different on various monitors; they disagreed that the marks supported the identification as a Swainson's. A point on which all members could agree is the difficulty in assessing some records of the genus *Catharus*, and particularly with the duller, western race of the Veery (*C. f. salicicola*). More discussion with photos can be found at http://fog.ccsf.edu/~jmorlan/veer100104.htm.

SPRAGUE'S PIPIT *Anthus spragueii*. A reported Sprague's Pipit flying over Twin Peaks, SF, 30 Sep 2005 (2005-149) was heard calling and studied in flight, but the circumstances of the record provided little opportunity for committee support, especially for an occurrence well to the north in California and on the early end of the species' fall window of vagrancy.

YELLOW-THROATED WARBLER *Dendroica dominica*. One at Fallbrook, SD, 20 Sep 2005 (2005-124) was seen briefly, was described incompletely and found very little committee support.

GRACE'S WARBLER *Dendroica graciae*. One at Buckhorn Campground, San Gabriel Mts., LA, 25 Nov 2005 (2005-215) would be only the second montane winter record for California following one at Chilao, LA, 22 Oct 1995–10 Mar 1996 (1996-030; Garrett and Singer 1998). Although the description was largely consistent with Grace's Warbler and received some support, no wing bars were noted, and the majority of the CBRC did not accept the identification.

CONNECTICUT WARBLER *Oporornis agilis*. One described from Golden Gate Park, San Francisco, SF, 9 Oct 2005 (2005-140) received a split vote but failed on its second round. The description was mostly consistent with the Connecticut, but the description of pale wing edging and bright yellow undertail coverts concerned some members; the bird was never photographed and never seen walking, both of which would have helped to confirm the identification.

MOURNING WARBLER *Oporornis philadelphia*. The report of a first-fall male at Wilson Cove, San Clemente I., LA, 13 Oct 2003 (2004-012) received nearly unanimous support on its first round but ultimately failed 2–8 in its third round. A single photo was of little use to identification, so committee members focused on the description. Some detractors thought that a Nashville Warbler (*Vermivora ruficapilla*) may have been involved, partly because the bird was described as smaller and slimmer than the nearby Yellow Warblers (*Dendroica petechia*) and its head was described as gray. The relatively late date was a concern for others. The two supporters of the record stressed that the call was described as "tchich," utterly unlike the "pink" note (Dunn and Garrett 1997) of the Nashville, that the bill and legs were both pale (unlike the Nashville), that the experienced observer was unlikely to misidentify the bird to genus, and that the description of the eye ring, yellow throat, and partial collar eliminated MacGillivray's (*O. tolmiei*).

SCARLET TANAGER *Piranga olivacea*. One reported from San Clemente I., LA, 9 Nov 2005 (2005-216) was generally thought to have been correctly identified and received support from about half the committee but was ultimately not accepted primarily because of concern over confusion with the Summer Tanager (*P. rubra*).

SNOW BUNTING *Plectrophenax nivalis*. One described from Tilden Park, CC, 28 Nov 2002 (2004-115) received strong support from the committee and circulated four rounds before a final decision. The bird was observed feeding along a trail and perched up on a wire fence when startled; its white body plumage, tawny head, and orangish bill were described. The two detractors in the final round were concerned that the relatively brief description did not eliminate a leucistic White-crowned Sparrow (*Zonotrichia leucophrys*) and that the perching on a fence is less likely in the Snow Bunting than in sparrows such as the White-crowned.

BLACK ROSY-FINCH *Leucosticte atrata*. One reported at Montgomery Cr. Ranch, near Benton, MNO, 10–24 Feb 2001 (2001-057A) had previously been accepted by the CBRC for 16 Feb only (Cole and McCaskie 2004). The committee reviewed documentation from 24 Feb 2001 that would have extended the date span but ultimately did not accept the extension, primarily because of the distant views and inconsistencies between the descriptions from 16 February and 24 February (especially in bill color). The committee thus endorses the record from 16 Feb 2001 only.

BROWN-CAPPED ROSY-FINCH *Leucosticte australis*. A first-spring female rosy-finch at Aspendell, INY, 17 Apr–14 May 2005 (2005-049) was closely studied and photographed by many observers (Figure 13). We received excellent documentation that tentatively identified it as this species, which would be new for California. The bird stood out from surrounding Gray-crowned Rosy-Finches (*L. tephrocotis*) as duller, with reduced gray on the crown. The extent of gray on the crown appeared to vary with the lighting and arrangement of the feathers, however, and some photos show fairly extensive gray. The committee agreed that the gray was simply too extensive for a Brown-capped. The lack of black in the vanes of the crown feathers also eliminates the Brown-capped (R. E. Johnson in litt.); the Gray-crowned typically has crown feathers that are gray from edge to edge, while the Brown-capped has blackish centers with gray fringes. In addition, by virtue of the narrow, tapered primary coverts with narrow, worn fringes the bird was in its first spring. The very limited pink of the belly, wings, and rump imply it was a female. In the Brown-capped Rosy-Finch, first-spring females should show little or no gray on the crown; the adult male is the age and sex class likely to show the most extensive gray in the crown. In the Gray-crowned, the first-spring female should be the dullest plumage with the least gray in the crown, corresponding with the bird at Aspendell. Some committee members with extensive experience with the Gray-crowned in California believed that this bird was still outside the range of normal variation and perhaps an aberrant individual. This

Figure 13. This rosy-finch at Aspendell, Inyo County, 29 April 2005 was reported as a Brown-capped (*Leucosticte australis*). Although the very limited gray on the crown suggests that species, the committee concluded it was a one-year-old female Gray-crowned Rosy-Finch (*L. tephrocotis*) with minimal gray on the head. The Brown-capped has crown feathers that are blackish centrally and gray on the edges and a bigger bill.

Photo by Larry Sansone

record was instructive for the committee, since previous assessments of rosy-finches have focused on distinguishing the Black from the Gray-crowned. Most committee members commented that they thought it extremely unlikely for a Brown-capped to reach California, since that species has not yet been known to stray more than 100 miles from its limited breeding range (C. L. Wood pers comm.). Richard E. Johnson pointed out that the bill size may be useful also in eliminating Brown-capped. This fairly small-billed bird did not match the rather large-billed Brown-capped Rosy-Finch and instead matches well the subspecies of the Gray-crowned endemic to the Sierra Nevada, *L. t. dawsoni*.

RECORDS NOT ACCEPTED, IDENTIFICATION ACCEPTED BUT NATURAL OCCURRENCE QUESTIONABLE

BLACK-BELLIED WHISTLING-DUCK *Dendrocygna autumnalis*. One in the Imperial Valley, IMP, 28 Jul 2004 (2006-015) was apparently tame and considered not a wild bird.

BARNACLE GOOSE *Branta leucopsis*. One at the San Joaquin R. N.W.R., STA, 16–18 Jan 2005 (DM†; JM; 2005-025) was unbanded and associating with a flock of Aleutian Cackling Geese (*B. hutchinsii leucopareia*). While this species is migratory and could conceivably occur well out of range, it is also kept frequently in captivity. Most committee members do not believe the Barnacle Goose is likely to make it to California without assistance.

HARRIS'S HAWK *Parabuteo unicinctus*. One at the Carrizo Plain Natural Area, SLO, 18 Feb 1999 (KS†; 2004-057) points out the difficulty in assessing records of this species. This record predated several occurrences at locations farther southeast; San Luis Obispo County is not where most would think a vagrant Harris's Hawk likely. While some on the CBRC opined that this record could represent a natural vagrant, the majority believed it was premature to consider it as such.

COMMON CHAFFINCH *Fringilla coelebs*. The committee unanimously endorsed the identification of a male at Rolling Hills Estates on the Palos Verdes Peninsula, LA, 22 Jan–6 Feb 2005 (RHar†; 2006-017), and all members save one questioned the natural occurrence. The subspecies was not determined with certainty but was consistent with the widespread nominate subspecies that ranges from w Europe to Siberia.

The Common Chaffinch breeds throughout Eurasia south to the Mediterranean region, Iran, and w Siberia east to the Angara R.; northern and eastern populations are migratory (AOU 1998, ABA 2002). It is largely unknown east of there, although at least one presumed vagrant has reached Beidahe, China (A. Jaramillo in comments). It is an annual vagrant to Iceland in varying numbers (Cramp and Perrins 1994) and has reached Greenland at least twice in May and September (*F. c. coelebs*; Boertmann 1994). A 21 May 1994 record from Newfoundland has been widely accepted (DeBenedictis 1996, ABA 2002, AOU 1998), as it coincided with a significant flight of Eurasian species (*Field Notes* 48:271). Other records from Newfoundland (25 Feb 1967; Godfrey 1986), Nova Scotia (two in November; *Am. Birds* 43:281, Halliwell 2000), Maine (three, in April, May, and September; L. R. Bevier, L. R. Brinker pers. comm.), New Hampshire (7 May 1989; *Am. Birds* 43:451-452), Massachusetts (three reports; late March–early April), New Jersey, and Quebec (November; *N. Am. Birds* 55:25) are considered to possibly involve natural vagrants; local authorities have accepted the species for Newfoundland, Nova Scotia, Maine, and Massachusetts (e.g., Rines 2000). More westerly records from Ohio, Indiana, Louisiana, and Wyoming (AOU 1998) are considered to involve escaped cagebirds. The chaffinch's prevalence in captivity is not well-known, but clearly it is widespread. Dinsmore and Silcock (2004) detailed suspicions of a large-scale release of Eurasian passerines in the Chicago area in 2002, including Common Chaffinches as well as at least four other finches.

The California bird showed good plumage (although the tail was incompletely grown) but was in metropolitan Los Angeles. Most of the committee believed that the pattern of vagrancy gave no support to the idea of a wild origin. The one dissenter pointed out the record from Beidahe and hoped for more information on the species in captivity.

MISCELLANEOUS

Grinnell and Miller (1944) cited a specimen of the Hudsonian Godwit (*Limosa haemastica*) allegedly taken in California (Sibson 1943), then in the Christchurch Museum, New Zealand. With the help of Kimball L. Garrett and Paul Scofield, curator of vertebrate zoology at the Canterbury Museum in Christchurch, the mystery surrounding the specimen has been clarified. Scofield traced the specimen as most likely being part of the Seebohm collection, which was accessioned into the British Museum over a century ago. Given the make-up of that collection, this Hudsonian Godwit was almost certainly not collected in California; it was exchanged by the British Museum to the Canterbury Museum in 1903. Two other specimens of the Hudsonian Godwit from the Seebohm collection (still at the British Museum) were also labeled as being taken in California (Fleming 1921).

The CBRC has received no documentation for the following reports published in *North American Birds*: an Emperor Goose at the Eel R. W. A., HUM, 22 Feb 2005 (*N. Am. Birds* 59:319), and two at unnamed locations in n. California in Sep 2005 (*N. Am. Birds* 60:134); single Manx Shearwaters on Monterey Bay, MTY, 3 Apr 2005, 15 May 2005 (*N. Am. Birds* 59:489), and 23 Sep 2005 (*N. Am. Birds* 60:134); a Brown Booby on Southeast Farallon I. 22 Feb 2005 (*N. Am. Birds* 59:318); single Common Black-Hawks at Kirby Cove, MRN, 31 Mar 2005, Forestville, SON, 16 Apr 2005, and Arcata, HUM, 19 Apr 2005 (*N. Am. Birds* 59:490); a Crested Caracara at the Eel R. delta, HUM, Sep 2004–Jan 2005 (*N. Am. Birds* 59:319-320) and another at Rodeo Lagoon, MRN, 7 May 2005 (*N. Am. Birds* 59:490); single American Golden-Plovers at Cock Robin I., HUM, 15–16 Oct 2005 and the Eel R. mouth, HUM, 2 Nov 2005 (*N. Am. Birds* 60:135); an Iceland Gull in Yolo County 20 Jan 2005 (*N. Am. Birds* 59:320) and another in Humboldt County 28 Dec 2005 (*N. Am. Birds* 60:281); a Long-billed Murrelet off the coast of Humboldt County 26 Aug 2005 (*N. Am. Birds* 60:136); a Dusky-capped Flycatcher at Half Moon Bay, SM, 28 Dec 2005 (*N. Am. Birds* 60:281); a Blue-headed Vireo on Southeast Farallon I., SF, 20–21 Sep 2005 (*N. Am. Birds* 60:136); two Mourning Warblers on Southeast Farallon I., SF, 26 Sep 2005 (*N. Am. Birds* 60:137), and single Snow Buntings at Centerville Beach and Redwood Cr. mouth, HUM, 31 Jan 2005 (*N. Am. Birds* 59:322). Therefore these reports should be treated as unsubstantiated until the committee receives and reviews documentation.

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CORRIGENDA

The following corrections should be made to the Report of the California Bird Records Committee: 2004 Records (Cole et al. 2006). We thank David M. Compton for bringing some of these to our attention.

Jeremy Trimble, listed under "Acknowledgments" and "Contributors," should be changed to Jeremiah Trimble; under "Contributors" David A. Compton should be listed as David M. Compton and Jeff Polken should be changed to Jeff Poklen. The Scarlet Tanager at El Capitan, SBA, 22–25 Oct 1999 was found by Joan E. Lentz but her initials were inadvertently omitted; also change the initials DAC to DMC. The initials DC should be replaced with DMC for the following records: the Goleta, SBA, Yellow-green Vireo (2004-161); the Goleta, SBA, Sedge Wren (2004-162); and the Santa Barbara, SBA, Connecticut Warbler (2004-169). Note also that the Grace's Warbler (2004-145) was returning for its fourth, not third, winter. For Cassin's Sparrow, MJM is cited for contributing photos, but the published photos are from MMe. The citation for the Stonechat should read Sullivan and Kershner.

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Steve Abbott, Douglas W. Aguillard, Bernardo Alps, David Armstrong, Liga Auzins, Jessie H. Barry, Richard Barth (RBa), David Bell (DBe), Mark J. Billings, Andrew Birch, Thomas A. Blackman, David V. Blue, William G. Bousman, Gerald Braden, Richard Bradley (RBr), Matt Brady, Michelle D. Brodie, Ryan D. Burnett, Kenneth Burton, Richard Cabe, Eugene A. Cardiff, Stephen W. Cardiff, Barbara L. Carlson, Lark Chadwick, George Chaniot, Jamie M. Chavez, Karen Clark, Therese R. Clawson, Luke W. Cole, David M. Compton, Chris Conard, Peyton Cook, Cameron Cox, James Dean, Bruce E. Deuel, Ann Dewart, Jennice & Karl Dobroszczyk, Don Doolittle, Jon L. Dunn, Philip Eager, Tanner Easterla (TaE), Todd Easterla (ToE), Thomas M. Edell, Torrey J. Edell, Elias A. Elias, Michael U. Evans, John Farrell (JFa), Jon Feenstra (JFe), Nick Fittinghoff, Rob Fowler (RFo), Greg Frankfurter, Rick Fridell, Wes Fritz, Dave Furseth, Peter A. Gaede (PAGa), Kimball L. Garrett, Steve Gerow, Al Ghiorso, Karen S. Gilbert, Peter A. Ginsburg, Steve A. Glover, Gary B. Grantham, Edward D. Greaves, James M. Greaves, Nikolas K. Haass, Richard Hall (RHa), Robert A. Hamilton, Keith Hansen, Brett Hartle, Roger Harshaw (RoH), Randy Harwood (RHar), James A. Haw, Gjon C. Hazard, Jo Heindel (JHe), Matthew T. Heindel, Mary Hennan, Brad K. Hines, Justin Hite (JHi), James F. Holmes, Debbie House (DeH), Chris Howard, Steve N. G. Howell, Steve Huckabone, Lisa Hug (LiH), Lauren Hughes (LaH), Richard Hughes (RHu), Diana Humple (DiH), W. Terry Hunefeld, Marshall J. Iliff, Alvaro Jaramillo, Stewart Janes, Lauren Johnson, Oscar Johnson, Susan Kaveggia, Eric L. Kershner, Robert J. Kieffer, Howard B. King, Martha Klass, David Koeppel, Alexander E. Koonce, Kim Kreitinger, Kenneth Z. Kurland, Kevin G. Larson, David M. Lawrence, Rick Lebaudour (RLb), Paul E. Lehman, Tom W. Leskiw, Nick Lethaby, Ron LeValley, Kelli Heindel Levinson (KHL), Cindy Lieurance, Leslie M. Lieurance, Daniel Lockshaw, David Malia, Michael J. Mammoser, Tim Manolis (TMa), Curtis A. Marantz, Michelle A. Matson (MMa), Guy McCaskie (GMcC), Chet McGaugh (CMcG), Todd McGrath (TMcG), Bob

McMillan (BMcM), Jimmy M. McMorran, Anthony Mercieca, Martin Meyers (MMe), Bob Miller, Stan Moore, Joseph Morlan, Doug Morton, Vic Murayama, Thomas J. Myers, Levin Nason, David W. Nelson, Kristie N. Nelson, Hannah Nevins, Richard J. Norton, Cornelia Oedekoven, Lauren Outhisack-Morgan (LOM), Richard Pagen, Drew M. Pallette, Ed Pandolfino (EPa), Debbie & Jim Parker, Benjamin D. Parmeter, Michael A. Patten, Robert T. Patton, Kaaren Perry, James E. Pike, Mary F. Platter-Rieger, Jeff Poklen (JeP), Joan Powell (JoP), Eric Preston (EPr), Peter Pyle, David E. Quady, Gage Ricard, David C. Rice, Raul Roa, Don Roberson, Geoffrey L. Rogers, Michael M. Rogers, Michael Rogner, Kerry Ross, Phillip Roullard, Josee Rousseau, Steve Rovell, Matt Sadowski, Ben L. Saenz, Mike San Miguel (MSanM), Michael J. San Miguel Jr. (MJSanM), Larry Sansone, Brad K. Schram, Kathy Sharum, Debra L. Shearwater (DLSh), Daniel S. Singer, Brenda D. Smith-Patten, Gregory P. Smith, Susan E. Smith, Steve Sosensky, Rich Stallcup, Trent R. Stanley, Thomas Staudt, Robert Steele (RSt), Susan Steele (SSt), John C. Sterling, Mary Beth Stowe, Vi Strain, Sam W. Stuart, David L. Suddjian, Monte M. Taylor, Linda S. Terrill, Ryan S. Terrill, Scott B. Terrill, Edward Thomas, Ronald S. Thorn (RSTh), Jim Tietz, Francis Toldi, Alex Tongas, David Vander Pluym, Todd Vogel, Lorena Warner-Lara, Walter Wehtje, Joel D. Weintraub, Janet Wessel (JaW), Jerry R. White, Jim White (JWh), William Widdowson, John C. Wilson, Alan N. Wight, Thomas E. Wurster, Jason D. Yakich.

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COLONIZATION OF THE EASTERN BLUEBIRD ALONG THE RIO GRANDE IN NEW MEXICO

JEAN-LUC E. CARTRON, Department of Biology, University of New Mexico, Albuquerque New Mexico 87131; jlec@unm.edu

MICHAEL D. MEANS, Rio Grande Bird Research, Inc., 4426 San Isidro NW, Albuquerque New Mexico 87107

DAVID L. HAWKSWORTH and DEBORAH M. FINCH, Rocky Mountain Research Station, U.S. Forest Service, 333 Broadway SE, Suite 115, Albuquerque New Mexico 87102-3497

ABSTRACT: During the 20th century the Eastern Bluebird (*Sialia sialis*) expanded its range westward, mainly as a result of anthropogenic alteration of habitats. Along the Rio Grande in New Mexico the species' numbers in winter have recently increased spectacularly, and from 1999 through 2004 four records of breeding were published. Here we report 30 further nestings in just 2005 and 2006. In all 30 cases, the birds nested in the cottonwood riparian forest along the river following fire, postfire habitat rehabilitation, or fuel reduction work, all leading to partial or complete removal of the understory vegetation. The Eastern Bluebirds' observed nesting season lasted from late March through the end of July. Most (17) nesting was in nest boxes, with an observed mean productivity of 1.43 fledglings per nest attempt in 2005 (n = 7) and 2.1 fledglings per nest attempt in 2006 (n = 10).

During the 20th century the Eastern Bluebird (*Sialia sialis*) slowly expanded its range west, mainly in response to anthropogenic alteration of habitats formerly unsuitable to the species (Bent 1949, Gowaty and Plissner 1998). It was first recorded in New Mexico in 1943, and by the late 1970s it had established itself in the eastern part of the state as a migrant and winter resident (Hubbard 1978). In the 1970s and 1980s it spread farther west into New Mexico, including the Rio Grande valley, where Hubbard (1978) and Hink and Ohmart (1984) described its occurrence as only irregular to occasional. In 1975, the Eastern Bluebird was for the first time recorded as breeding in New Mexico, at Rattlesnake Spring in the southeastern part of the state (Hubbard 1978).

Since about the turn of the new century, numbers of the Eastern Bluebird wintering in parts of the Rio Grande valley have increased spectacularly (Figure 1; Williams 2001, 2002, 2003, 2004a). Breeding was also documented along the Rio Grande at Socorro in 1999, at Mesilla in 2000, and in Albuquerque and near Radium Springs in 2004 (Williams 1999, 2000, 2004b). Here we report on an apparent surge in the number of breeding Eastern Bluebirds during 2005 and 2006 along a 90-km stretch of the Rio Grande in central New Mexico. We provide detailed information on local nesting habitat and chronology.

METHODS

Study Area

The middle Rio Grande lies in New Mexico, stretching over a distance of approximately 280 km from Cochiti Dam to Elephant Butte Reservoir

(Figure 2). Along the banks of the river is a riparian forest (hereafter "bosque") dominated by Rio Grande cottonwoods (*Populus deltoides* var. *wislizenii*). Largely because of dams, levees, and bank-stabilization projects, much of the bosque is no longer flooded, preventing the regeneration of cottonwoods and contributing to invasion by exotic shrubs, mainly the Russian olive (*Elaeagnus angustifolia*) and saltcedar (*Tamarix chinensis*). Until recently, most of the bosque consisted of stands of mature or senescent cottonwoods with thickets of Russian olive and saltcedar in the understory and a layer of organic debris (branches, logs, and leaf litter) on the forest floor. In response to a recent increase in the frequency of wildfire in the bosque, fuel-reduction and postfire rehabilitation projects have been undertaken on a large scale (especially in the Albuquerque area) since the winter of 2003–2004. Fuel reduction has involved mechanical removal of shrubs, snag cutting, grinding, mowing, tree planting, and/or grazing by goats. Postfire rehabilitation treatments have consisted of fire-residue grinding, weed mowing, and tree planting. In all cases, most or all of the understory vegetation was removed.

Survey and Monitoring Techniques

The information presented here is from several studies conducted by us and focusing mainly on avian response to fuel reduction and attempts to rehabilitate the habitat following the fires. Our datasets typically comprised information on bird nesting before and after vegetation treatment.

Research by Hawksworth and Finch consisted of point-count surveys and nest searches conducted annually since 2000, from the second week of May through at least the second week of July. Hawksworth and Finch began their work in 2000 at 12 sites and added three more in 2001, one more in 2002, and yet one more in 2005. The 17 study sites covered a total area of 340.5 ha along 19.5 km of river. Except for the site added in 2005 where work consisted only of nest searches, all sites were the focus of eight point-count surveys during the first year they were studied. Subsequently, point-count surveys were conducted at those sites at least four times every year, for a minimum total of 24 surveys at each site through 2006. Hawksworth and Finch searched for bird nests at each of the 17 sites for a minimum of 6 hours every week for a minimum total of 54 hours every year.

Research by Cartron included spot-mapping of bird nests in 16 ha of riparian forest along a 0-6 km stretch of the river in the south valley of Albuquerque. Most of the understory was removed mechanically in the fall of 2005. Field work took place at least twice every week from April through July in 2005 and 2006. Additionally, as part of general wildlife surveys primarily in the Albuquerque area, Cartron surveyed about 255 ha of treated and untreated riparian forest along a 10-km stretch of the Rio Grande at least once in the spring of both 2005 and 2006.

Research by Means included both general surveys and monitoring of nest boxes placed 1.2–1.7 m above ground at two locations in Albuquerque that burned in 2003 and 2004, respectively, before being rehabilitated. A combined total of 51 nest boxes was installed before the beginning of the nesting season in 2004 at the two locations representing collectively an area of 80 ha along 6 km of river. The total number of nest boxes increased to 53

Figure 1. Male Eastern Bluebird in bosque along Rio Grande at Albuquerque, New Mexico, December 2006

Photo by Doug Brown

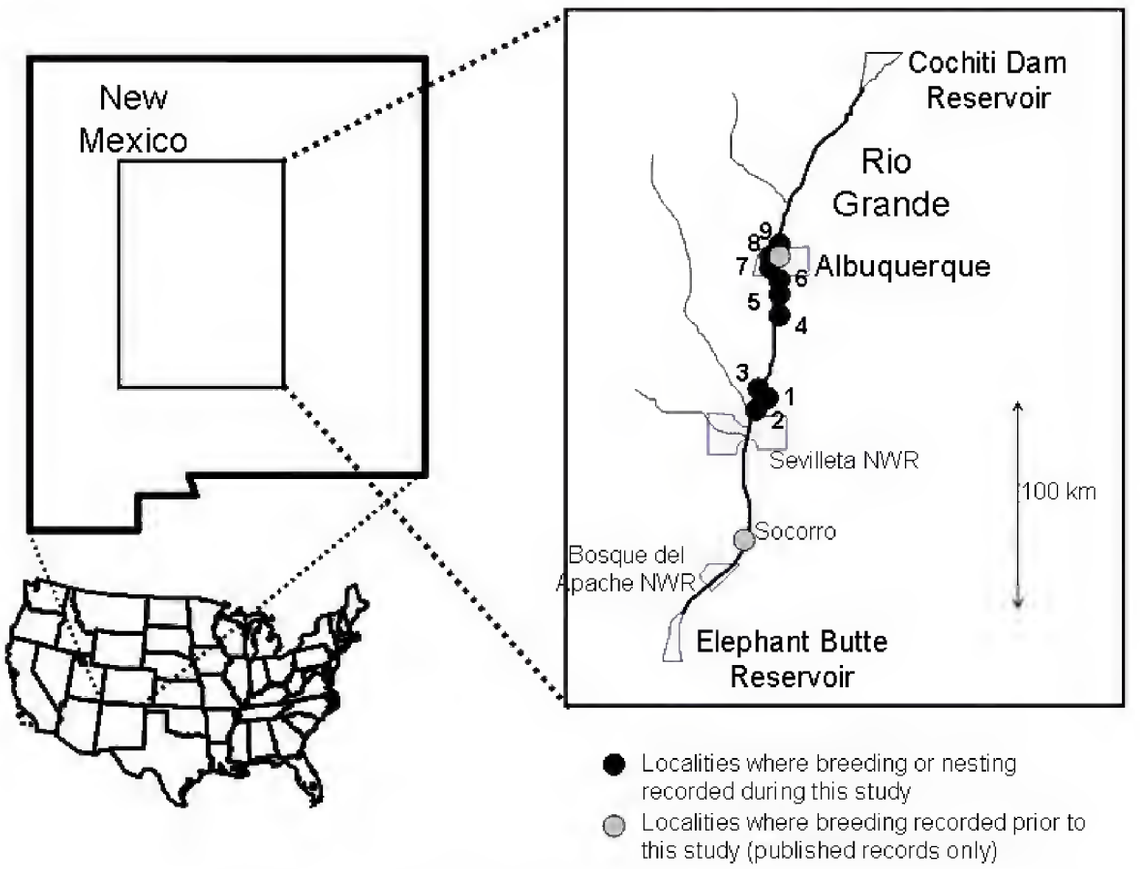

Figure 2. Middle Rio Grande, with locations of Eastern Bluebird nesting or breeding. 1–9: localities where breeding or nesting was recorded during this study. 1, approximately 1 mile NE of the village of Abeytas, Socorro County; 2, approximately 1 mile SSE of Abeytas; 3, approximately 1½ miles east of Bernardo, Socorro County; 4, Los Lunas, Valencia County; 5, Bosque Farms, Valencia County; 6, South Valley of Albuquerque, Bernalillo County; 7, Rio Grande Nature Center State Park and vicinity, Albuquerque, Bernalillo County; 8, Montaño Bridge and vicinity, Albuquerque, Bernalillo County; 9, La Orilla area, Albuquerque, Bernalillo County. The nest-box study took place at localities 8 and 9.

in 2005 and 54 in 2006. Two types of boxes were used during the study, one designed for Bewick's Wrens (*Thryomanes bewickii*), with 3.175-cm oval entrance holes (type 1), the other designed for bluebirds, with 3.81-cm round holes (type 2). The relative proportion of type-1 versus type-2 boxes was similar in all years. Nineteen type-1 boxes were used in 2004, 2005, and 2006. Thirty-two (63%) type-2 boxes were used in 2004, 34 (64%) were used in 2005, and 35 (65%) were used in 2006. At the onset of the study all type-1 boxes and most type-2 boxes were used rather than new. About 15% of all type-2 nest boxes were new but manufactured by Means from scrap wood. Monitoring of the nest boxes was continuous from late March through mid-July.

RESULTS

Altogether we documented a total of 30 nestings of the Eastern Bluebird along the middle Rio Grande, 9 in 2005 and 21 in 2006. Five records

were from south of Albuquerque (Figure 2, localities 1–5); 25 were from the Albuquerque metropolitan area (Figure 2, localities 6–9), 23 of them along a stretch of the river measuring only about 4.5 km where the nest boxes had been installed.

Nest-Box Study

In 2004, nest boxes were used by both Ash-throated Flycatchers (*Myiarchus cinerascens*) and Bewick's Wrens but not by Eastern Bluebirds (Figure 3). In 2005, however, Eastern Bluebirds occupied six boxes, in 2006, nine. In contrast to the bluebird's pattern, there was no surge in the number of nest boxes occupied by Bewick's Wrens, while the increase in occupancy seen in 2005 for the Ash-throated Flycatcher did not continue in 2006 (Figure 3). Eastern Bluebirds used only type-2 nest boxes (v 4).

In both years, the bluebirds began building nests in late March or the first week of April. We observed nest building directly during that time at nine nest boxes (three in 2005, six in 2006), and nest building could be backdated to late March at two additional nest boxes in 2005. Nest building was also recorded during the second half of May and in June. Five pairs were with eggs by the end of the first week of April (two in 2005, three in 2006), while the latest a pair was observed with eggs was 25 June. Hatchlings were recorded as early as the third week of April and as late as the last week of

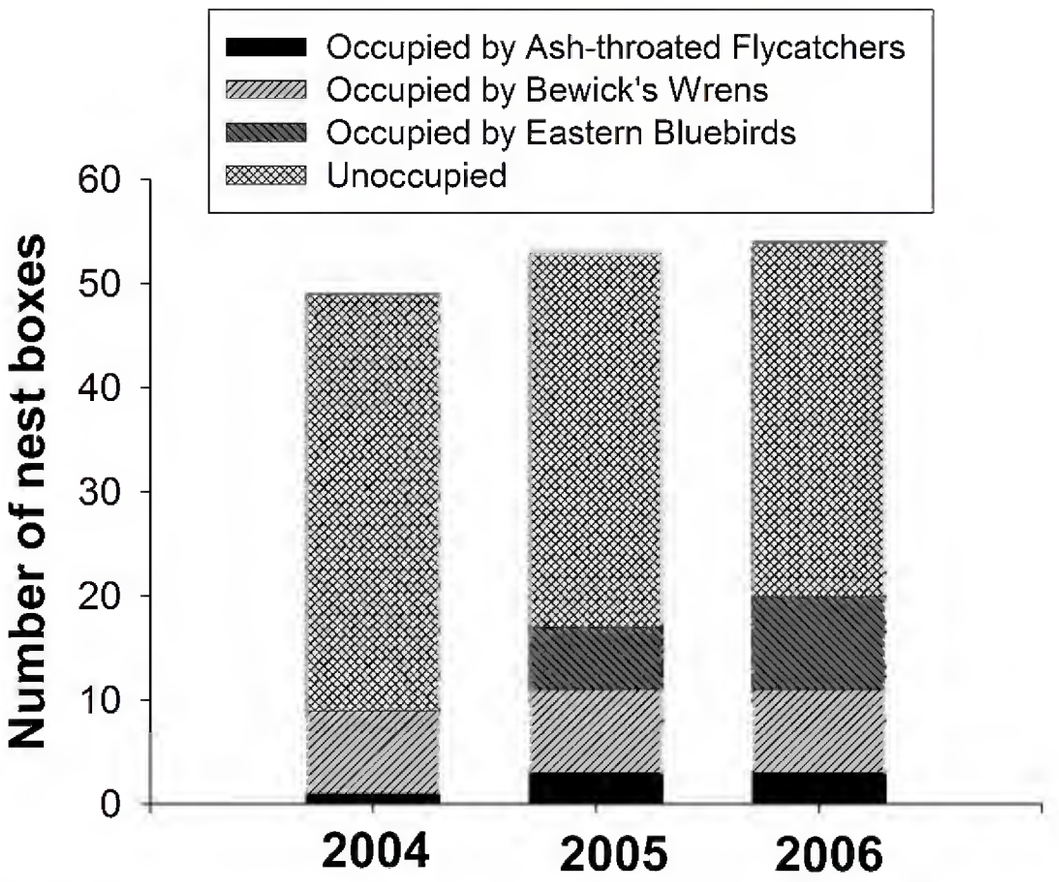

Figure 3. Number of nest boxes used for nesting by the Eastern Bluebird, Ash-throated Flycatcher, and Bewick's Wrens in 2004, 2005, and 2006 in Albuquerque study areas.

June. Fledging was observed as early as 1 May. Three pairs fledged young in mid-July, two in 2005, the other in 2006.

In 2005 one of the six Eastern Bluebird nest boxes in 2005 was used twice, for a total of seven nesting attempts in nest boxes that year. In 2006, one of the nine Eastern Bluebird nest boxes was again the site of two nesting attempts. In 2005, three (43%) of the seven nesting attempts were successful, for a total of ten fledglings produced (mean productivity 1.43 per nesting attempt). In 2006, six (60%) of the ten nesting attempts were successful, for a total of 21 fledglings (mean productivity 2.1 per nesting attempt). Two nest boxes, one each in 2005 and 2006, produced five fledglings.

Other Observations of Nesting or Breeding

In 2005, we noted two nestings not in boxes. One was in Socorro County approximately 1 mile northeast of the village of Abeytas (Figure 2, locality 1) in a natural cavity 4.5 m above the ground in a dead cottonwood. The adults were adding nesting material on 10 May but possibly already had eggs, as the female was inside the cavity for long periods of time. The area had burned in June 2004; it had only dead cottonwoods and 95% bare ground in May 2005. It was not on any of our study sites and was not monitored. Interestingly, there were three other pairs and two single males in the area as well. The males were acting territorial. The second observation was of a fledgling foraging away from the boxes in the bosque in Albuquerque on 13 July.

In 2006 our records not involving nest boxes included observations of 11 pairs nesting or with fledglings. Seven of those pairs were in Albuquerque, but the other four were scattered over about 90 km south to the vicinity of Bernardo in northern Socorro County (Figure 2, localities 2–5). In six cases, the nest was found. One was a natural cavity 4.4 m high in the trunk of a live cottonwood where a branch had broken off (Figure 2, locality 2). The nest had nestlings when found on 16 May and fledged two young (seen 24 May). The other five nests were in woodpecker holes all in live or dead cottonwoods at heights of 5.5, 5.8, 6, 10, and 15 m. One nest was in one of two closely spaced woodpecker holes in an ascending dead branch, the other hole having been occupied in 2005 by a pair of Ash-throated Flycatchers. That last Eastern Bluebird nest cavity was occupied until late July but did not fledge young, the nest failure coinciding with the occupied part of the branch breaking off.

Five of our 2006 records were based on observations of adults with fledglings, at five locations where no nests were found, on 17 May, 2 June, 20 June, 17 July, and 18 July. The maximum number of fledglings observed was three, on 2 June. The bosque around the site of the 17 May observation had been thinned in winter 2003–2004 and burned in mid-June 2006. The family of Eastern Bluebirds, however, was still present and foraging in the burned area after the fire.

DISCUSSION

The number of nestings and fledglings we report here strongly suggests the recent establishment of a sizeable population of the Eastern Bluebird along

Figure 4. Female Eastern Bluebird incubating in a nest box at Albuquerque, New Mexico.

Photo by Michael D. Means

Figure 5. Example of Eastern Bluebird nesting habitat in bosque along the middle Rio Grande. Although this nesting habitat is quite variable, it is always characterized by the absence of an understory of shrubs.

Photo by Jean-Luc E. Cartron

the middle Rio Grande. Whether that breeding population is distributed fairly evenly along the entire length of the middle Rio Grande is unknown. As many as eight of our 2005 records and 15 of our 2006 records were from along a 4.5-km stretch of the river in Albuquerque where nest boxes had been installed. Thus it is possible that the concentration of records in that area was due largely to nest boxes serving as tools to enhance detection. We did not search for nests along the northern segment of the middle Rio Grande, while to the south our coverage was less extensive than near Albuquerque. Observations of additional pairs and territorial males in 2005 at locality 1, however, suggest fairly high densities of breeding Eastern Bluebirds outside the Albuquerque area as well.

As described elsewhere, typical Eastern Bluebird habitat consists of open woodland or savanna with little or no understory, including recently burned areas, clearcuts, and edges of forests (e.g., Howell 1965, Gowaty and Plissner 1998; Figure 5). Despite our monitoring of several sites within the bosque of the Rio Grande since 2000, we found no Eastern Bluebirds nesting anywhere prior to thinning or fire, when habitat in the bosque was most likely unsuitable because of its extensive understory thickets. Neither did we detect nesting of Eastern Bluebirds in 2005 or 2006 in areas of the bosque still characterized by a dense understory.

In addition to large-scale vegetation thinning and fires, the nest boxes used in our research likely played a role locally, as Eastern Bluebirds are notorious for their propensity to use them (Gowaty and Plissner 1998). In 2003 and 2004, however, Smith et al. (2007) installed and monitored nest boxes at four burned and four unburned sites along the middle Rio Grande in Socorro and Valencia counties, south of the Albuquerque nest box sites monitored by Means. Boxes numbered from 0 to 14 per site, depending on location and year, totaling 53 in 2003 and 97 in 2004. Over the two years, 0 or 33% of the boxes at burned sites were occupied in a year, while at unburned sites 10 or 57% were occupied. Those boxes were used by two species, the Ash-throated Flycatcher and Bewick's Wren, with no Eastern Bluebirds, in contrast to the situation at the burned sites in Albuquerque. All nest boxes put up by Smith et al. (2007) were bluebird-type nest boxes (D. M. Smith pers. comm.). No postfire rehabilitation had been attempted at the sites studied by Smith et al. (2007) sites, in contrast to some—but not all—of the burned sites where we detected Eastern Bluebirds.

The absence of Eastern Bluebirds from the nest boxes studied by Smith et al. (2007) might be related to the time since the fire and subsequent succession and habitat composition. At the time when Smith et al. (2007) put up their boxes their sites had burned one, two, four, and eight years earlier than had the burned sites around Albuquerque monitored by Means. Saltcedar and other woody plants had resprouted or returned in varying densities to older burned sites (Finch pers. obs.), possibly discouraging bluebirds from using boxes. In addition, the understory of the bosque south of Albuquerque is more likely to be dominated by saltcedar, whereas in Albuquerque it tends to have more Russian olive than saltcedar (Finch unpubl. data). Competition with the Ash-throated Flycatcher, which prefers open sites (Smith et al. 2007) similar to those used by the bluebird, may also have played a role, though direct evidence of exclusion is lacking.

On the basis of our data, a more likely explanation is that although suitable nesting habitat existed in 2004, or in some cases even 2003, there were far fewer Eastern Bluebirds in the middle Rio Grande valley prior to 2005 to breed in that habitat. As stated above, five of our 2006 records of Eastern Bluebird nesting were from areas we had monitored intensely for at least three years. In four of those five cases our detection of nesting Eastern Bluebirds lagged the fire or vegetation treatment by one or two years. One of the two nest-box study areas in Albuquerque had burned in 2003, yet no bluebirds occupied the boxes in 2004. The time lag was not related to succession, as Eastern Bluebirds also nested in 2006 following vegetation thinning in the fall of 2005. Nesting and breeding records from our research thus presumably reflect a surge in Eastern Bluebird numbers along the western edge of the species' range in New Mexico, as part of further expansion to the west.

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NOTES

INCREASING WINTER ABUNDANCE OF THE MARBLED GODWIT IN WASHINGTON

JOSEPH B. BUCHANAN, Cascadia Research Collective, 218½ West Fourth Avenue, Waterstreet Building, Suite 201, Olympia, Washington 98501; buchajbb@dfw.wa.gov

In the first half of the twentieth century the Marbled Godwit (*Limosa fedoa*) was considered a rare species in Washington (Jewett et al. 1953). Its status has changed since that time, and it is now locally common in migration and winter in coastal Washington (Buchanan 2005). The extension of the winter distribution is particularly unusual in that the new range is substantially north of the species' contiguous range in central California and also well north of isolated areas of winter occurrence in northern California and southern Oregon (Gratto-Trevor 2000). In this paper I present data that illustrate a change in the Marbled Godwit's abundance during winter in coastal Washington over the last several decades.

I summarized the available records of the Marbled Godwit from coastal Washington between 1975–76 and 2004–05. These records were obtained from *North American Birds* and its predecessors, seasonal field reports in *WOSNews* (newsletter of the Washington Ornithological Society) and my field notes. The records represented high counts of Marbled Godwits between November and February in 26 of the 30 winters during this interval. I considered all high counts from Grays Harbor or Willapa Bay to represent the same population and used high counts from either site for analysis. I believe this was appropriate because the vast majority of records were from northern Willapa Bay (specifically from the well-known roost site at Tokeland) and records from Grays Harbor are far less regular (Buchanan 2005), strongly suggesting that occasional flocks at Grays Harbor originated from the Tokeland roost. Marbled Godwits are rare away from these two areas (Buchanan 1992, Paulson 1993, Buchanan 2005).

The Marbled Godwit's abundance increased dramatically over the period of analysis. A curvilinear regression model with a quadratic function revealed a significant positive correlation between reported high count and year (F-ratio = 11.5, r^2 = 0.574, P = 0.0007) (Figure 1). High counts exceeded 1000 birds in 2003–04 and 2004–05. Similar changes in abundance have been evident in spring and autumn migrations since the 1960s (Buchanan 2005), but these are difficult to evaluate with this type of analysis because movements and turnover are not accounted for in the reported seasonal high counts.

The Marbled Godwit breeds in three disjunct areas (Gratto-Trevor 2000). One of these is in southwestern Alaska (Gibson and Kessel 1989), where *L. f. beringiae* nests over 2000 km from the next closest segment of the breeding range, which extends from Alberta east through the Canadian prairies, home of *L. f. fedoa*. The third population, also of nominate *fedoa*, nests around James Bay (Gratto-Trevor 2000). The winter range of the Alaskan birds is unknown but is suspected to include coastal Washington (Gibson and Kessel 1989, Melcher et al. 2005).

There are at least four possible explanations for the increase in numbers of the Marbled Godwit reported in coastal Washington in the last few decades. First, the change may reflect better coverage of suitable sites by bird watchers and ornithologists. This explanation seems unlikely, as these birds are very visible and have used the same foraging and roosting sites for several decades, a period during which the area has been visited by observers regularly.

The second and third potential explanations of the increase may operate simultaneously. The increases may reflect an increase in the overall abundance of the species,

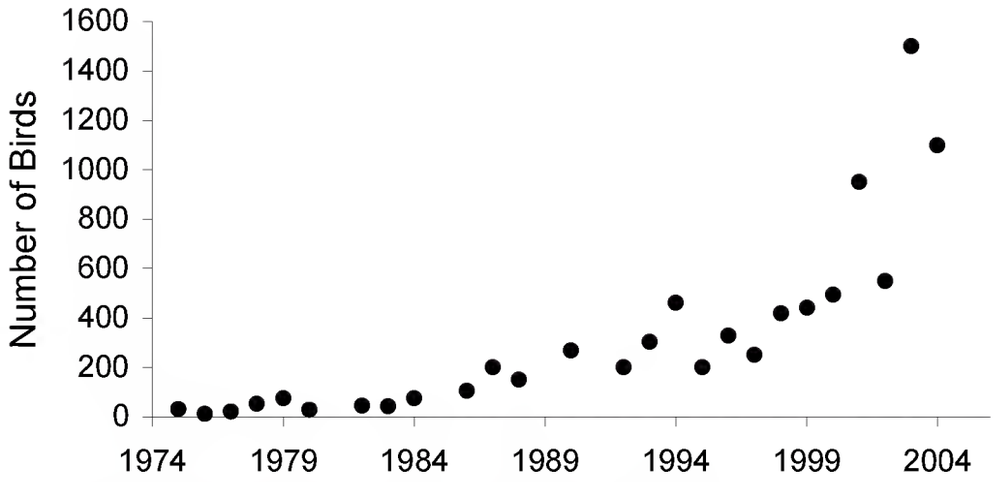

Figure 1. High winter counts of the Marbled Godwit in coastal Washington from Grays Harbor or Willapa Bay.

or they may reflect a shift in its winter distribution from farther south (i.e., California). I evaluated Christmas Bird Count (CBC) data (obtained from www.audubon.org/bird/cbc) from sites in both northern (combined from Marin, Monterey Peninsula, Moss Landing, Oakland, and Point Reyes Peninsula CBCs) and southern California (combined from Los Angeles, Morro Bay, Oceanside, Salton Sea [north], Salton Sea [south], San Diego, Santa Barbara, and Ventura CBCs) from 1980 to 2004 to seek indications of changing abundances in those regions. The godwit's abundance on northern California CBCs combined increased slightly but not significantly (r^2 = 0.09, F ratio = 2.25, P = 0.15); on southern California CBCs it declined from the early 1980s then increased slightly beginning in the late 1990s (curvilinear model with quadratic function; r^2 = 0.49, F ratio = 10.4, P = 0.0007). Numbers at Arcata, California—the northernmost site within the contiguous winter distribution along the Pacific coast—did not change between 1986 and 2004 (r^2 = 0.003, F ratio = 0.05, P = 0.82). In addition, the species is uncommon in Oregon in winter (McGie 2003), and most CBC records are from Coos Bay, where the godwit occurred in two of 14 years between 1980 and 1993 but in nine of 11 years between 1994 and 2004 (median of 9 counts = 8 birds). The CBC results from Oregon are generally consistent with the recent changes observed in Washington. Data from California suggest a slight increase in northern California (but not at Arcata) that coincided with a decline in southern California in the early 1980s, and this suggests the possibility of a shift north. Without banding data, however, the CBC data are inconclusive with respect to the latter two possible explanations of changes in godwit numbers in Washington, and additional analysis will be required to evaluate these two scenarios.

Although the population of the Marbled Godwit breeding on the Great Plains (*L. f. fedoa*) is thought to have declined (Page and Gill 1994, Gratto-Trevor 2000), the status of the population breeding in Alaska (*L. f. beringiae*) is unknown (Melcher et al. 2005). Thus a fourth hypothesis suggests itself: the godwit's increase at Willapa Bay may reflect an increase in the population of *beringiae* and may be unrelated to any population trend or shift in nominate *fedoa*. Gibson and Kessel (1989) concluded that the winter range of *beringiae* most likely coincides with the northern end of the Marbled Godwit's winter range. They identified three specimens from Willapa Bay as *beringiae*, but these were collected on 17 April so could have been migrants that wintered farther south. Since no winter specimens have yet been collected around Willapa Bay, the breeding range of the birds wintering there is not yet known (Melcher et al. 2005). The subspecies differ in proportions, *beringiae* having a shorter tarsus,

wing, and bill, even though its weight averages greater (Gibson and Kessel 1989). Identifying the breeding origin of the birds that use Willapa Bay may facilitate a better understanding of the factor(s) resulting in their increased abundance locally.

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PELLET-CASTING BY A WESTERN SCRUB-JAY

MARY J. ELPERS, Starr Ranch Bird Observatory, 100 Bell Canyon Rd., Trabuco Canyon, California 92679 (current address: 3920 Kentwood Ct., Reno, Nevada 89503); mjelpers@aol.com

JEFF B. KNIGHT, State of Nevada Department of Agriculture, Insect Survey and Identification, 350 Capitol Hill Ave., Reno, Nevada 89502

Pellet casting in birds of prey, particularly owls, is widely known. It is less well known that a wide array of avian species casts pellets, especially when their diets contain large amounts of arthropod exoskeletons or vertebrate bones. Currently pellet casting has been documented for some 330 species in more than 60 families (Tucker 1944, Glue 1985). Among the passerines reported to cast pellets are eight species of corvids: the Blue Jay (*Cyanocitta cristata*) (Lamore 1958, Tarvin and Woolfenden 1999), Pinyon Jay (*Gymnorhinus cyanocephalus*) (Balda 2002), Gray Jay (*Perisoreus canadensis*) (Strickland and Ouellet 1993), Black-billed Magpie (*Pica hudsonia*) (Trost 1999), Yellow-billed Magpie (*Pica nuttalli*) (Reynolds 1995), American Crow (*Corvus brachyrhynchos*) (Verbeek and Caffrey 2002), Northwestern Crow (*Corvus caurinus*) (Butler 1974), and Common Raven (*Corvus corax*) (Temple 1974, Harlow et al. 1975, Stiehl and Trautwein 1991, Boarman and Heinrich 1999). However, the behavior has not been recorded in the four species of *Aphelocoma* jays (Curry et al. 2002, Woolfenden and Fitzpatrick 1996, Curry and Delaney 2002, Brown 1994). Here we report an observation of regurgitation of a pellet by a Western Scrub-Jay (*Aphelocoma californica*) and describe the specimen and its contents.

The Western Scrub-Jay is omnivorous and forages on a variety of arthropods as well as plant seeds and small vertebrates (Curry et al. 2002). Because of the presence of indigestible components such as chitin, cartilage, and hair in many of these food items, pellet casting by this species is expected. During 25 years of study of Western Scrub-Jays at the Starr Ranch Audubon Sanctuary in Orange County, California, and in northwest Nevada, Elpers had a few sightings of jays regurgitating unknown materials, but pellets were never located in the dense scrub inhabited by these birds. This is not surprising because of the anticipated relatively small size of the pellets, the likelihood that they decompose rapidly in the wild, and the density of vegetation into which they may be expelled. That the jays actually cast a pellet was uncertain.

On the afternoon of 26 June 2006, Elpers observed an adult female (sex determined by behavior and plumage) Western Scrub-Jay regurgitate a pellet onto a sidewalk in northwest Reno, Washoe County, Nevada (39° 54′ N, 119° 86′ W, elevation 1524 m). The scrub-jay was accompanied by an adult male jay and a dependent fledgling. The female had approached a food item on the ground but stopped about 1.5 m from it, turned slightly to the side, leaned forward and extended her head and neck slightly and appeared to be straining moderately. She stretched her head and neck out two more times, lowered her head, and gaped widely, regurgitating a moist pellet which dropped at her feet. The pellet was not expelled forcefully. The jay then hopped toward the food item, which she took and then flew off.

Using a pair of forceps, Elpers immediately collected the pellet and placed it in a plastic container. The pellet was well formed and had a surface coating of mucus holding it together securely. The wet weight at collection was 0.37 grams. The pellet was air dried (humidity ranged from 10 to 15% during the two-day drying period), after which it weighed 0.20 grams. When dry, the pellet measured 12.30 mm long × 7.8 mm wide × 4.78 mm deep (Figure 1).

The following day, Knight identified arthropod fragments and organisms in the sample to the extent possible. He placed the pellet in 70% ethanol, separated the constituents, and examined and identified the contents through a dissecting microscope. Elpers later counted and categorized the pellet contents.

Figure 1. Pellet cast by a Western Scrub-Jay in northwestern Nevada.

Photo by Mary J. Elpers

We found a total of 1741 fragments in the pellet. These included bits of insect chitin and softer tissue; insect and spider leg segments; partially digested insect wing bases and membranes; insect setae and bristles; insect mouth parts, cerci, and a genital capsule; two insect heads; a spider fang, tibia, and head capsule; four plant-tissue fragments; 14 plant seeds typical of those found in commercial bird-seed mixes; and 26 small grains of grit. Organisms found in the pellet that could be identified to order or family from the fragments available were three beetles (order Coleoptera; identified from black pitted elytra, mandibles, and a genital capsule), one of them a root weevil (family Curculionidae), probably *Otiorhynchus meridionalis*, a species common in and under shrubs in northwest Nevada (identified from a head, tibia, and elytra); an ant (order Hymenoptera, family Formicidae), probably *Tetramorium caespitum* (identified from a head and mandible); an earwig (order Dermaptera, family Forficulidae), probably the European earwig, *Forficula auricularia*, the only earwig common in the area (identified from a cercus); and a spider that could not be identified to family (identified from a head capsule, leg segments, and a fang). Other orders of arthropods may have been present but could not be identified. The number of individual prey could not be determined, as that number would depend on the extent to which the arthropods were digested, their size, and the heterogeneity of the various prey species (Craighead and Craighead 1956). The longest insect fragment measured 5.20 mm and the smallest was less than 1 mm in diameter.

Although a fair amount of information is available on the food and foraging habits of Western Scrub-Jays west of the crests of the southern California mountain ranges and the Sierra Nevada (Curry et al. 2002, Carmen 2004), such information is sparse for interior populations (Curry et al. 2002). In diet analysis, many small food items such as spiders and other arthropods are difficult to identify from a distance in the field. Thus much existing information comes from analysis of stomach contents of collected birds. Pellet collection and examination may provide another method of diet analysis for this species that is noninvasive compared to obtaining stomach contents by collecting the bird, using emetics, or flushing. Western Scrub-Jays spend time during daylight hours roosting, often using the same site day after day, and in suburban environments they have been observed using the same night roost on consecutive dates for months at a time (Elpers unpubl. data). Pellets possibly may be obtained by locating these sites and developing a way to collect any discharged there, adding to the data base on the Western Scrub-Jay's diet.

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A WHITE-CROWNED SPARROW WITH THREE LEGS

ANJA M. SCHILLER, KEITH W. LARSON, and JOHN D. ALEXANDER. Klamath Bird Observatory, P. O. Box 758, Ashland, Oregon 97520; kwl@klamathbird.org

On 15 October 2004, while mist-netting at the Seven Mile Guard Station (elevation 1285 m; 42° 42′ 18″ N, 122° 4′ 26″ W) in the Klamath Ranger District of Winema National Forest, Oregon, we caught an immature Gambel's White-crowned Sparrow (*Zonotrichia leucophrys gambelii*) with three legs. On examination, we found that the third leg originated from the right side of the cloaca (Figure 1). The leg was divided into two sections, the upper part (tibia) being fleshy, thick, and pink, ending in yellow scar tissue (Figure 2). The lower section of the leg (tarsus) was much thinner with little tissue over the bone, brownish in color, and ending with two partially formed digits (without claws) representing the toes normally directed forward and one hallux (with a claw). The leg was nonfunctional, hanging below the bird when perched. The sparrow appeared healthy in all other respects and was released after examination.

Additional appendages have been reported in four other wild birds: an American Robin (*Turdus migratorius*; Shufeldt 1919), a House Sparrow (*Passer domesticus*; Stoneman 1932), a Mourning Dove (*Zenaida macroura*; Frankowiak 1962), and a Cattle Tyrant (*Machetornis rixosa*; Lopes et. al. 1981). All of these cases (except the House Sparrow) describe an additional leg originating from a tibiotarsus or immediately above a "normal" leg. Ours is the first known report of a third leg originating from the cloacal region. The House Sparrow possessed two extra limbs that were fused together and were associated with an extra cloaca. Additional legs can also be associated with an extra pelvis (Shufeldt 1919). We do not know whether our White-crowned Sparrow had a second pelvis.

Figure 1. Gambel's White-crowned Sparrow with third leg showing origin adjacent to cloaca.

Figure 2. Close-up of third leg of Gambel's White-crowned Sparrow showing two clawless digits and one hallux with claw.

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GREAT HORNED OWL DIURNAL RESPONSE TO A PASSERINE DISTRESS VOCALIZATION

ROBERT M. BOGARDUS and KENT A. HATCH, Department of Integrative Biology, Brigham Young University, 401 WIDB, Provo, Utah 84602; khatch@byu.edu

LANDON R. JONES, Department of Plant and Animal Science, Brigham Young University, 275 WIDB, Provo, Utah 84602

The Great Horned Owl (*Bubo virginianus*) is considered a crepuscular and nocturnal predator that preys primarily on small mammals (Cromrich et al. 2002). It is an opportunistic feeder, however, and has a diet broader than that of any other North American owl (Marti and Kochert 1996). There is extensive indirect evidence (pellets, prey remains, etc.) that the Great Horned also hunts diurnally (Earhart and Johnson 1970, Jaksic et al. 1981, Bosakowski et al. 1989, Bogiatto et al. 2003, Ganey and Bloch 2005). However, direct observations of this behavior are rare, and how often Great Horned Owls actually hunt during the day is unknown. Owls' use of sound to detect prey in the dark is also well documented (Payne 1971, Konishi 1973, Marti 1974), but the use of audio detection by Great Horned Owls during the day has not been reported. In this paper, we describe our observation of a Great Horned Owl attempting to take a distressed American Robin (*Turdus migratorius*) during daylight hours.

As part of a study involving banding migratory passerines, we set up mist nets at Soldier Hollow, Wasatch Mountain State Park, Utah (40° 28′ N, 111° 29′ W, 1800 m elevation). A family of two adult Great Horned Owls and one fledgling was observed roosting in the area. The nets were placed near the edge of a small stand of mature cottonwood trees, which provided shade for the vicinity. On 27 July 2006, a juvenile male American Robin was captured in a net at approximately 09:00 hours MDT. The weather was sunny and clear. As we approached the net, the robin began giving loud distress calls, which continued unabated while we extracted the bird from the net. The robin continued its vocalizations for approximately 5 minutes while being transported to and measured at the banding station.

As the robin was being processed, an adult owl flew in and perched approximately 3 m above the ground on a snag 10 m from the banding station. The owl was apparently attracted by the distress calls emitted by the young robin and continued to watch the bird as it was handled (approximately 3 min). The owl was close enough that we could determine that its gaze was focused solely on the robin, not the banders. Once the robin had been banded and released, it flew 5 m to a branch, where it began to preen. As soon it had perched, the owl dove at the robin. The robin emitted an alarm vocalization and avoided the owl, flying away from the perch unharmed. We did not observe the owl attempt to capture the robin again.

Previous studies have found the remains of diurnal prey in Great Horned Owl pellets, so researchers have inferred that these owls hunt during the day. However, the percentage of remains of diurnal prey in a pellet may not be an accurate representation of the species' diurnal hunting activity. Remains of diurnal prey may be the result of crepuscular or even nocturnal hunting by owls if normally diurnal prey shift activity to these periods. Additionally, Great Horned Owls may hunt during the day if large numbers of diurnal prey are available (Michener 2001). They have been observed providing food for their young during the day (Powell and Powell 1994), which may have been the case near our banding station as well, given that we observed a fledgling owl at the site. We found only a handful of accounts in the literature describing direct observation of this species capturing prey during the day (Sherman 1912, Dixon 1914, Fitch 1947, Packard 1954, Vaughan 1954, Powell and Powell 1994, Michener 2001). Studies aimed at quantifying actual levels of diurnal activity in this species would be valuable.

Another potential reason for hunting at unusual hours may be the detection of injured or otherwise helpless prey. Many predators, including raptors, will respond (move or turn toward the sound, attack, etc.) to alarm vocalizations given by potential prey (Conover 1994, Jurisevic and Sanderson 1998, Wise et al. 1999). Our observation indicates that the Great Horned Owl may also use its hearing to locate prey in the daytime. However, to what extent Great Horned Owls use auditory cues to locate diurnal prey, and how often they respond to alarm vocalizations, are unknown and bear further investigation.

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Scientific Presentations Scheduled for WFO's 32nd Annual Conference, Las Vegas, Nevada, 27–30 September 2007

Bargiel, R., and J. Klicka: An investigation of western hybrid zones in two avian species groups: Western Flycatcher and Solitary Vireo.

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Bates, K. K., et al.: American White Pelican foraging area distances in relation to nesting colonies in Nevada and South Dakota.

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Braden, G., et al.: Avian diversity, vegetation composition and vegetation structure of the Las Vegas Wash.

Brown, B., et al.: Southwestern Willow Flycatchers, Yuma Clapper Rail, and Western Yellow-billed Cuckoo activity along Las Vegas Wash, Clark County, Nevada.

Carson, R., and J. Klicka: The phylogeography of pine–oak birds.

Clune, G., and M. Johnson: Yellow-billed Cuckoo surveys along the lower Colorado River: 2006–07.

Crampton, L. H., et al.: Diurnal, nocturnal, and crepuscular space use by Laysan Teal (*Anas laysanensis*) on Laysan Island.

Dodge, C.: Winter banding results from the lower Colorado River, 2002 to 2006.

Eidel, J., et al.: Breeding birds of the Carson River, western Nevada.

Farnsworth, A., et al.: Nocturnal passerine migration in the southwestern United States, as documented by automated recording of night flight-calls.

Fletcher, D., and J. Hutcheson: Distribution and site selection of the Le Conte's, Crissal, and Bendire's Thrashers across the eastern Mojave Desert.

Haas, W. E., and A. C. Zych: A 10-year study of the Southwestern Willow Flycatcher in southern California.

Halterman, M., and L. Oring: Detection probabilities of Yellow-billed Cuckoos on the San Pedro River, 2004-5, and implications for population estimation.

Herr, C., and J. Klicka: Phylogeography of the Painted Bunting.

Kahl, J.: Marshbird surveys along the lower Colorado River.

Klicka, J., et al.: The evolutionary history of House Wrens.

Olson, T.: The lower Colorado River multi-species conservation program: An overview.

Powell, R.: Nevada's Important Bird Areas.

Ryan, T., et al.: Snowy Plovers in Los Angeles County: Survey results and management recommendations.

Smith, B. T., and J. Klicka: What can DNA tell us about birds? Exploring the role of DNA in avian systematics, biogeography, and conservation.

Sferra, S. J., et al.: Saltcedar as habitat for birds: Implications for riparian restoration in the southwestern United States.

Wong, D.: Riparian restoration and bird monitoring on the lower Truckee River.

Yates, M. A., et al.: Determining remote sources of contaminants in a local White-faced Ibis population.

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A CALIFORNIA SPECIMEN OF THE WEDGE-TAILED SHEARWATER

STEVE N. G. HOWELL, P. O. Box 423, Bolinas, California 94924

While examining specimens at the Museum of Vertebrate Zoology (MVZ), University of California, Berkeley, I came across a specimen of the Wedge-tailed Shearwater (*Puffinus pacificus*) that lay misidentified as a Short-tailed Shearwater (*P. tenuirostris*). The bird was collected in Santa Cruz, Santa Cruz County, California, on 1 April 1915 by A. G. Vrooman, in "Read's Yard" (apparently somewhere in the town). It was originally kept in the collection of O. P. Silliman (when the identification as the Short-tailed was made), which was later donated to the MVZ.

The original data include measurements (in inches) of total length (17¾″), wing (11″), bill (1⅜″), tarsus (1¾″), tail (5″), and extent or wingspan, (37½″), scrawled on a receipt from A. C. Snyder's dry-goods store in Santa Cruz, together with the annotation "Pac. Sooty SW [presumably = Pacific Sooty Shearwater (*P. griseus*)] or Slender-billed SW – under wing cvts. not whitish." In 1915 the Wedge-tailed Shearwater was unrecorded in the United States, and the only dark-bodied shearwaters known from California were the Short-tailed (= Slender-billed), Sooty, and Flesh-footed (*P. carneipes*). Additional data noted on the specimen's label are "outside tarsus and outside toe bluish, webs, middle and inside toe flesh, pale." The bird's bill is slender and dark overall, unlike the stout and mostly pink bill of a Flesh-footed.

The specimen has a broken left wing but otherwise is in good shape. It is completing molt, with the outermost primary (p10) still about 5 mm short of p9, left rectrices 5 and 3 growing, and right rectrices 5 and 2 growing. My measurements of the bird are wing chord 273 mm (longest primary growing), tail 125 mm (growing), exposed culmen 35.5 mm, and tarsus 45.2 mm; these agree very closely with those of Vrooman. The bird is a typical dark-morph Wedge-tailed Shearwater with the long and strongly graduated tail characteristic of that species; from Loomis (1918), the Wedge-tailed Shearwater's tail measures 128–148 mm (n = 47), the Short-tailed's 77–90 mm (n = 44), and the Sooty's 80–98 mm (n = 165).

Although the Wedge-tailed Shearwater is common across most of the tropical Pacific, including waters off western Mexico, it is remarkably rare north of Mexico. There are but seven other records from the western United States, all since 1986 and all but one between late July and late October: four from California (Stallcup et al. 1998, McCaskie and Webster 1990, Erickson and Hamilton 2001, Rogers and Jaramillo 2002), two from Oregon (Marshall et al. 2003), and one from Washington (Wahl et al. 2005). Five of these seven birds have been dark morphs, including the only two North American specimens: from Newport, Oregon, on 26 March 1999, and near Ocean City, Washington, on 10 September 1999. A specimen of the light morph, collected on an unknown date before August 1919 and labeled as from Vancouver, British Columbia (San Diego Natural History Museum 19417, Jewett 1929), is now regarded as of uncertain origin, and the record is regarded as hypothetical (e.g., Godfrey 1966). The Santa Cruz specimen predates other North American records by over 70 years and is also the first from California. Details of the specimen and four photos of it have been deposited with the California Bird Records Committee (CBRC record 2007-048). I thank Carla Cicero at the MVZ for access to the collection and for help in checking the specimen's history, and I thank Kimball Garrett and Guy McCaskie for their review of this note.

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A NESTING RECORD OF THE MASKED BOOBY FROM GUERRERO, SOUTHERN MEXICO

JOSÉ ALFREDO CASTILLO-GUERRERO, JUAN PABLO CEYCA, and ERIC MELLINK, Centro de Investigación Científica y de Educación Superior de Ensenada, B.C., Apdo. Postal 360, Ensenada, Baja California, México (U.S. mailing address: CICESE, P.O. Box 434844, San Diego, California 92143-4844); emellink@cicese.mx

The Masked Booby (*Sula dactylatra*) nests on tropical islands around the world (Nelson 1978, Pitman and Jehl 1998). In the eastern Pacific Ocean it nests on oceanic islands hundreds of kilometers from the coast, including the Rocas Alijos (Baja California), Clarión and San Benedicto (in the Revillagigedo Islands), and Clipperton (Pitman and Jehl 1998, AOU 1998). Its main feeding area is near and west of Clipperton and the Revillagigedo Islands, on the border of the Northern Equatorial Countercurrent (Pitman and Jehl 1998). There are no previous reports of this species breeding on near-shore islands in the eastern Pacific. Here we report the nesting of two pairs of Masked Boobies at Morros del Potosí (17° 31′ N, 101° 29′ W).

Figure 1. Masked Boobies, adult and chick, on Morros del Potosí, Guerrero, México, 11 June 2006.

Photo by Juan Pablo Ceyca

Morros del Potosí (known as White Friars Rocks to American boaters) are three small islands and some detached rocks 15 km east of the city of Zihuatanejo, in the state of Guerrero, southern México, and 3 km from the coast. They are 50–65 m high, very steep, and devoid of vegetation. The islands support a large colony of the Brown Booby (*S. leucogaster*) as well as breeding Red-billed Tropicbirds (*Phaethon aethereus*), Bridled Terns (*Sterna anaethetus*), and Brown Noddies (*Anous stolidus*) (Mellink and Riojas-López 2005). Between January and June 2006 we visited the island closest to shore on eight occasions to study the breeding ecology of Brown Boobies.

On 4 January we found two nests guarded by adult Masked Boobies. The adults had bright yellow bills, yellow irides, and grayish-green legs, the attributes distinguishing the Masked from the similar Nazca Booby (*S. granti*). Each nest contained two eggs. The parents alternated in their attendance of the nests, but in the late afternoon all four parents were present. Both nests were on rocks at the top of the island, the island's only relatively flat and open area. There were Brown Booby nests 3 m from the Masked Booby nests.

On 27 January one of the Masked Booby nests contained one egg, the other a chick of about one week of age [we used chick-plumage ontogeny in the Blue-footed (*Sula nebouxii*) and Brown Boobies to approximate its age]. On 24 February both nests were empty, but two adults were standing about 50 m from them. On 1 April, one pair was incubating two eggs in one of the former nests, suggesting an attempt at renesting. On 13 May this nest contained a chick about two weeks old. On 11 June the chick, now approximately six weeks old, was still in the nest and appeared healthy (Figure 1).

Our observation could document the formation of a new colony. In boobies, new colonies apparently form rarely, as breeding is greatly influenced by the social stimuli provided by a minimum number of conspecific individuals (Coulson 2001). New breeders are usually recruited into established colonies (Forbes and Kaiser 1994). Nesting in a colony other than the natal colony is rare but documented in the Sulidae, with long-distance dispersal more frequent than short-distance dispersal (Huyvaert and Anderson 2004, Castillo-Guerrero and Mellink 2007).

Juveniles and subadults that use a certain area for some years to rest and interact socially, however, could form the nucleus of a new colony (Coulson 2001). The Masked Boobies on Morros del Potosí could represent such a case, as even after abandoning their nests they remained in the vicinity. Their breeding success was low, possibly reflecting lack of experience, typical of young individuals. No Masked Boobies had been seen on previous visits to Morros del Potosí (Howell and Engel 1993, Mellink and Riojas-López 2005), although they have been recorded in low numbers along the Mexican Pacific coast, mostly in pelagic waters (Pitman and Jehl 1998). Our record from Morros del Potosí is atypical in three ways. First, the islands are close to land; Masked Boobies nest typically on pelagic islands far from continents. Second, the nests were atop a steep rocky island, a habitat typical of the Nazca Booby, rather than on a low, flat, open island, as typical for the Masked. Third, Morros del Potosí are close to the Gulf of Tehuantepec, the main foraging grounds of the Nazca Booby but not of the Masked, which rather forages west of the Revillagigedos and Clipperton.

The ecological anomalies of Masked Boobies nesting on Morros del Potosí suggest that the characteristics so far reported as the species' breeding habitat might result not from actual habitat selection but just be the characteristics of the traditional colonies. Whether the pairs breeding on Morros del Potosí eventually lead to the formation of a new colony or abandon this site and, perhaps, be recruited into an existing colony elsewhere can be known only with further research. Finding out will increase our knowledge of the ecology of this species and of Sulidae in general.

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NOTES

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PREDATION BY THE SONORAN WHIPSNAKE ON BIRDS IN SOUTHWESTERN NEW MEXICO

CARROLL D. LITTLEFIELD, The Bioresearch Ranch, P. O. Box 117, Rodeo, New Mexico 88056

Snake predation of bird eggs and nestlings is well documented (e.g., Best 1974, Skutch 1976, 1999, Nolan 1978, Finch 1981, Facemire and Fretwell 1980, Rodriguez-Robles 2002), and there are accounts of adult birds being killed by snakes, particularly rat snakes (*Elaphe* spp.) and Gopher Snakes (*Pituophis catenifer*), at nest sites (e.g., Blem 1979, Joern and Jackson 1983, Brown and Brown 1996, Stake 2001). Away from nests, rattlesnakes (*Crotalus* spp.) reportedly have preyed on adult birds ranging in size from the Field Sparrow (*Spizella arborea*; in Best 1974) to the Northern Bobwhite (*Colinus virginianus*; Bendire 1895), but more unusual are observations of nonvenomous snakes capturing birds older than fledglings. Skutch (1989) rescued a female Scarlet-rumped Tanager (*Ramphocelus passerinii*) from the jaws of a 1-m-long unidentified green snake in Costa Rica, and here I report attempts at predation on four passerines and two hummingbirds by the Sonoran Whipsnake (*Masticophis bilineatus*). Agile and capable of very rapid movement, this frequently arboreal serpent generally inhabits riparian woodlands, rocky bajadas, and madrean woodland in southeastern Arizona (Bezy and Enderson 2003) and southwestern New Mexico (pers. obs); its range in Mexico extends south in canyons and on mountain slopes to Oaxaca. All encounters were at the Bioresearch Ranch (TBR) headquarters, within the Central Peloncillo Research Natural Area, 12 km south-southeast of Rodeo, Hidalgo County (31° 50′ N, 109° 01′ W), in the madrean archipelago of mountains in far southwestern New Mexico. The surrounding vegetation consists primarily of madrean evergreen woodland (Brown 1994) at an elevation of 1648 m. A feeding station at the headquarters generally attracts large numbers of birds, and the observed whipsnake attacks occurred near feeders. Following is a brief account of these encounters.

The first was on 5 May 2002 as an adult male House Finch (*Carpodacus mexicanus*) landed at a water dish beneath a Fragrant Sumac (*Rhus aromatica*). As the finch landed, a large Sonoran Whipsnake (~1.5 m) lying concealed in a runway of the Yellow-nosed Cotton Rat (*Sigmodon ochrognathus*) rapidly lunged and grasped the bird by its right wing and flank. Considerable distress calling and flapping of the left wing did not deter the predator. As I approached, the whipsnake released the finch and rapidly retreated; the finch flew away.

The second occurrence was at the same site on 18 May 2002, and it appeared to involve the same snake. As the snake laid horizonally on a branch of a Catclaw Mimosa (*Mimosa aculeaticarpa*), an adult male Black-headed Grosbeak (*Pheucticus melanocephalus*) landed at the branch's tip. The whipsnake attacked, grasping the grosbeak as it did the House Finch. Dropping to the ground, the snake appeared to be receiving considerable abuse from the free and flapping left wing, but it did not release its grip. Upon my approach the snake released the bird and disappeared, but within 15 min it returned, lying horizontally on a nearby Fragrant Sumac branch.

On 27 August 2002 a smaller Sonoran Whipsnake (~1.2 m) captured a migrant juvenile Rufous Hummingbird (*Selasphorus rufus*). From a position on a horizontal branch of a Mexican Manzanita (*Arctostaphylos pungens*), it rapidly charged and grabbed the wing and flank as the hummingbird landed on the branch. Dropping to the ground, it released the bird as I approached; the victim flew away but was listing to one side. The snake was back on the same branch after 20 min.

On 17 September 2002 apparently the same snake was on the same manzanita branch, and in the same manner it captured another juvenile Rufous Hummingbird.

Again upon my approach the snake released the hummingbird and retreated; within 30 min it was back on the same branch.

I observed no attempted whipsnake predation in 2003 (perhaps because of an infestation of the White-nosed Coati, *Nasua narica*, at the feeding station), but on 23 October 2004 I heard wing-flapping beneath a thicket of the Apache Plume (*Fallugia paradoxa*). There, an immature White-crowned Sparrow (*Zonotrichia leucophrys*) was in the jaws of a smaller whipsnake (~0.6 m). The snake retreated as I approached, but it did not release the sparrow. The snake carried the bird into a burrow of the Rock Squirrel (*Spermophilus variegatus*).

On 28 April 2005, a small (~0.6 m) whipsnake lunged from a low catclaw branch, grasping a Pine Siskin (*Carduelis pinus*) that was foraging on the ground ~25 cm away. On my approach the snake did not release the bird but climbed into a Whitethorn Acacia (*Acacia constricta*). After I captured the snake it released the siskin.

These and other observations suggest the Sonoran Whipsnake is an efficient predator of free-flying juvenile and adult birds. On 28 August 1994, near Portal, Cochise County, Arizona (ca. 26 km NW of TBR), Alan Craig and Narca Moore-Craig (pers. comm.) watched a Sonoran Whipsnake descend a Desert Sumac (*R. microphylla*) with a dead Lark Sparrow (*Chondestes grammacus*) in its mouth, and on 16 July 2005, in Portal, Richard Webster (pers. comm.) saw a whipsnake capturing an adult male Lesser Goldfinch (*Carduelis psaltria*) as it approached a feeder (Figure 1). The whipsnake is described as a consumer of nestling birds, lizards, and frogs (Degenhardt et al. 1996); to this list, free-flying juvenile and adult birds can be added, as the Sonoran Whipsnake has little problem capturing small birds, particularly where birds concentrate at feeding and watering sites. All whipsnake observations reported here

Figure 1. Sonoran Whipsnake with captured Lesser Goldfinch at Portal, Arizona, 16 July 2005.

Photo by Richard E. Webster

were at feeding stations, demonstrating how bird feeding may attract predators and increase the potential for predation.

The larger whipsnakes I saw capturing birds in 2002 have not been seen since spring 2003. In summer 2003, and remaining through winter 2004, some 25 coatis occupied the headquarters' feeding station, suggesting these snakes either vacated the area or became prey for these mammalian omnivores.

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THE SHORT TALE OF A MELANISTIC BLACK-VENTED SHEARWATER

STEVE N. G. HOWELL, P. O. Box 423, Bolinas, California 94924

At the Museum of Vertebrate Zoology (MVZ), University of California, Berkeley, I re-examined a controversial specimen of a dark-plumaged shearwater, collected on 19 December 1910 in Monterey Bay by Rollo Beck (MVZ specimen number 18691). Beck was evidently puzzled by this bird and tentatively identified it as a Christmas Shearwater (*Puffinus nativitatis*). Loomis (1918:116) described the specimen, presented its measurements, featured a photo of it, and carefully re-identified it as a Black-vented Shearwater (*P. opisthomelas*) representing "a peculiarly significant example of melanism." Notwithstanding this, Everett (1988:97) asserted that the specimen "is actually a typical Short-tailed Shearwater (*Puffinus tenuirostris*) ... The reason Loomis re-identified the specimen as *opisthomelas* is unknown." The bird was labeled as a Short-tailed Shearwater when I examined it at the MVZ on 1 February 2007, but it is not recorded who identified it as such (C. Cicero pers. comm.). Everett, unlike Loomis, offered no rationale for his opinion.

On first glance, the bird does look rather like the Short-tailed Shearwaters among which it had been laid, but its forehead is more sloping (the anterior end of the skull is intact, enabling evaluation of this feature), its bill longer, and its underwing coverts are solidly dark. As noted by Loomis (1918), its measurements are typical of a Black-vented Shearwater and serve to eliminate the Short-tailed and Christmas shearwaters. From Loomis (1918), measurements of 103 specimens of the Black-vented Shearwater: wing chord 234–254 mm (264–290 mm in 44 specimens of the Short-tailed), tail 71–84 mm (77–90 mm in the Short-tailed), exposed culmen 33.3–39.5 mm (29.7–35 mm in the Short-tailed), and tarsus 39.4–45.9 mm (44.3–51 mm in the Short-tailed). Loomis (1918) gave the measurements of MVZ 18961 as follows (my measurements in parentheses): wing "about" 240 mm (235 mm, see below), tail 75 mm, culmen 37.2 mm (37.0 mm), and tarsus 45 mm (45.5 mm). The bird is completing wing molt (the outermost primary, p10, falls 35 mm short of the tip of p9). When p10 is full grown, its tip exceeds p9 by about 5 mm in the Black-vented and 5–10 mm in the Short-tailed, implying a wing chord of 240–245 mm if the feather were fully grown. The specimen's measurements thus conform to a Black-vented Shearwater; its wing and tail are too short for a Short-tailed, and its bill is too long. The throat and underparts are sooty gray, like those of a Short-tailed Shearwater, but the axillars and underwing coverts appear to be darker gray than typical of a Short-tailed. The photo of this bird in Loomis (1918) is the basis for the statement by Howell and Webb (1995) that the Black-vented Shearwater has the "underbody rarely entirely dusky," which was not intended to imply that the species manifests a continuum in underpart tone from light to dark; the latter authors failed to appreciate the singular example of melanism that this specimen represents.

I agree with Loomis (1918) that this odd specimen is a Black-vented Shearwater and find Everett's (1988) comments to have no basis. If such a bird were to be seen at sea, it would prove puzzling. Indeed the hurried flight of a Black-vented is rather different from the "snappier" and more buoyant flight of a Short-tailed, and this probably misled Beck into wondering if MVZ 18691 might be a Christmas Shearwater. In comparison to the melanistic Black-vented, a Christmas Shearwater in life is darker and more uniformly chocolate brown overall with a longer tail, a steeper forehead, and a shorter, blackish bill (Figures 1 and 2; the bill of a Black-vented in life is paler and grayish overall). The flight of a Christmas Shearwater also tends to be less hurried than that of a Black-vented. This bird highlights the problems posed by atypical individuals and the value of specimens permanently archived. I thank Carla Cicero at

Figure 1. Black-vented Shearwater off Puerto Angel, Oaxaca, Mexico, on 8 March 2007. Note the relatively long, overall grayish bill and the sloping forehead.

Photo by Steve N. G. Howell

Figure 2. Christmas Shearwater off Puerto Angel, Oaxaca, Mexico, on 8 March 2007. Note the relatively short, black bill accentuated by the relatively steep forehead.

Photo by Steve N. G. Howell

the MVZ for access to that collection and for help in checking this bird's history, and I thank Kimball Garrett for review of this note.

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BOOK REVIEWS

Albatrosses, Petrels, and Shearwaters of the World, by Derek Onley and Paul Scofield. 2007. Princeton University Press, Princeton, NJ. 240 pages, 45 color plates, range maps. Paperback, $29.95. ISBN-13: 978-0-691-13132-0.

Albatrosses and petrels, often referred to collectively as tubenoses, are among the most remarkable of birds, living as they do in the marine environment where human beings are little more than occasional, almost alien, visitors. Because of the difficulties in simply viewing tubenoses at sea, and because many species look similar, these birds pose many identification challenges. Peter Harrison's classic *Seabirds: An Identification Guide*, published in 1983, and his follow-up photographic guide published in 1987, kindled the nascent pelagic dreams of land-based birders. Today it is easy to criticize Harrison's books for some clunky illustrations and errors, but they were genuine contributions that set the stage for subsequent progress. Almost 25 years later a new guide to these birds' identification worldwide would be welcome. Is this book (hereafter APSW) a worthy successor to Harrison? Has it incorporated what has been learned and published in the past 20 years?

Tubenoses are arguably my favorite birds, and of the 135 extant species covered in APSW I have seen all but eight at sea. I had the opportunity this spring to use a pre-publication copy of the book on a voyage from New Zealand to Japan, and have just returned from two weeks of pelagic trips off North Carolina, where I received more feedback about APSW.

The book begins with a list of the species and subspecies of the world's tubenoses, with reference to the plates on which they are illustrated. Species split here include the Gray-faced Petrel (*Pterodroma gouldi*) from the Great-winged (*P. macroptera*), the Trinidade Petrel (*Pterodroma arminjoniana*) from the Herald (*P. heraldica*), and the Macaronesian (*Puffinus baroli*) and Galapagos (*P. subalaris*) shearwaters from Audubon's (*P. lherminieri*). The preface and acknowledgments are followed by a short discussion of taxonomy and species concepts, an overview of the four traditional tubenose families, and sections on identification, conservation, and how to use the book. Then come the plates with facing captions, followed by species accounts with maps. A single page of references and an index round out the book, which is small enough to fit in a large jacket pocket.

The introduction is written is an informal style that should be accessible to anyone. The discussion of identification includes useful tips about lighting, wind conditions, molt, and, especially, the effects of plumage wear and fading; surprisingly, there is no discussion of the birds' shape, which is a fundamental step in tubenose identification. Measurements have been taken from various sources rather than by the authors, and no size ranges are given, even for species with appreciable sexual dimorphism. On p. 19 we are told that "In this guide we concentrate on the identification of birds in flight," a focus unfortunately narrow because albatrosses and shearwaters are often seen at rest on the water, where they pose further identification challenges. The section on conservation is sobering, but no citations are provided so one cannot follow up on information reported. That the conservation section is almost as long as the identification section suggests that some motivation for the book came from a desire to increase public appreciation and conservation awareness about these wonderful birds. This is commendable, but it is somewhat ironic that this book is far less rigorous in its execution than the conservation-driven taxonomy it criticizes (pp. 12–13).

The acknowledgments of APSW "accept that any inaccuracies here are our own. We would love to hear from anyone…who disagrees with us and welcome a vigorous debate." At the bottom of p. 30 the authors further note that "this book is [in] no way the final word on seabird identification but intended to promote open discussion and an exchange of information, preferably of a friendly and enthusiastic nature over cups of tea or a beer or two." Peer review prior to publication would have been more

desirable than such disclaimers, however, as would have been extensive experience at sea with most species treated and a serious attempt to synthesize relevant literature. This book, like so many guides to bird families these days, seems to have been produced largely in a vacuum.

Good illustrations are critical for species identification. I like Derek Onley's illustrations in *The Hand Guide to the Birds of New Zealand* (H. Robertson and B. Heather, 1999, Penguin Books, Auckland, New Zealand), including the tubenoses. His wash paintings and semi-impressionistic style worked well for an avifauna without too many identification challenges, and he often captured the shapes of various petrels and shearwaters. By contrast, the paintings in APSW are disappointing (exacerbated by insipid printing in my copy). In part this may be due to Onley's lack of familiarity with many of the species, but such a lack does not explain why most figures are stiff and misproportioned. In fact, in the New Zealand guide the very same species have better shapes (e.g, Buller's Shearwater). I am often unable to identify a painting to species without consulting the facing captions to see what it is supposed to be, and the book also employs user-unfriendly labels (such as 5a, 5b, 5c, etc.), which slow the flow of information. On plate 16, Murphy's Petrel is shown as ashy gray overall whereas Solander's (Providence) Petrel is dark brown, except for a small figure of the latter that is also ashy gray (allegedly this is a bird in worn plumage—but then it should look darker and browner, not paler and grayer, as the authors themselves explain in the introduction). Anyone who has ever seen storm-petrels off the California coast might look at plate 42 and discard the book immediately (e.g., the Black Storm-Petrel does not have a tail fork deeper than the Markham's). Only one of the 13 Trinidade Petrels I saw off North Carolina looked much like any illustration in APSW, and even the plate showing the Sooty and Short-tailed shearwaters fails to capture the character of these birds.

How about the text? The very first page I opened and scanned happened to be p. 130, where we are told that Short-tailed Albatross is a "rare northeast Pacific breeder," and the map shows Hawaii as part of the breeding range. Yet this species breeds in the *western* Pacific, and it has never been confirmed breeding in Hawaii. This type of carelessness typifies the book. The range maps are often plain wrong, to the degree that I wondered if the maps were simply mismatched in many accounts. Waters off western Middle America are not mapped for species as regular there as the Wedge-tailed and Galapagos shearwaters or the Tahiti Petrel; Markham's Storm-Petrel allegedly occurs throughout the Gulf of California, the Black Storm-Petrel far offshore in the eastern tropical Pacific! West-coast birders will be surprised to see that the Flesh-footed Shearwater occurs only far offshore in the Gulf of Alaska and not farther south along North America's west coast. The mapped range of the Trinidade Petrel is restricted to the South Atlantic (although the text says "regularly seen off North Carolina"), whereas Fea's Petrel is mapped off North Carolina (although it is rarer there than the Trinidade Petrel). Some map layouts are also flawed: inexplicably, the maps for the Mottled Petrel and Short-tailed Shearwater, among other Pacific species, are centered on the Atlantic Ocean so that the ranges are unhelpfully split into two parts on the left and right sides of the map. The maps in Harrison's 1983 work may be more accurate overall and also helpfully note seasonality.

The accounts of behavior betray that the authors have little if any experience of seabirds in the northern hemisphere or Atlantic Ocean. The accounts for North American species thus lack first-hand descriptions of flight manner or comparisons between similar species. The Ashy Storm-Petrel (p. 235) allegedly "uses feet to push off sea surface and make rapid changes of direction," something I have never seen in any species of *Oceanodroma* storm-petrel. The discussions of identification are careless and often unhelpful. For example, we are told that the Galapagos Shearwater may occur in the same waters as the Tropical Shearwater (*Puffinus* [*bailloni*] *dichrous*) off Mexico, yet neither is mapped there. On p. 234, the periods of wing molt of the Black and Markham's storm-petrels are said to be the same (July to October), yet on

p. 233 we are told that Markham's probably undergoes wing molt in the southern spring and summer. No serious attempt was made to check the literature for North America or the Atlantic Ocean. For example, the egg dates given for Fea's Petrel refer only to the population on the Desertas Islands, not to the nominate subspecies on the Cape Verde Islands; the New Jersey record of Buller's Shearwater is noted, but not the California record of the Great-winged Petrel.

Other than offering an updated taxonomy relative to Harrison's guides, *Albatrosses, Petrels, and Shearwaters of the World* contributes little to help observers in North America identify tubenoses. I recently learned that one friend and colleague from the Atlantic coast, who has written extensively on tubenoses in North American waters, had eagerly ordered the book but, on seeing a copy, wrote and canceled his order! Your money would be better put toward going on a pelagic trip and enjoying the birds themselves.

Steve N. G. Howell

Introduction to Birds of the Southern California Coast, by Joan Easton Lentz, with photos by Don DesJardin. 2006. University of California Press. 240 pages, 120 color illustrations, 51 line illustrations, 16 maps. Paperback $19.95 (ISBN 0-520-24321-8). Hardback $55.00.

The southern California coast is a deservedly renowned hotspot for birdwatchers, a place where birds of colder northern waters mingle with a fascinating mix of warm-water birds. In places along this coast the movements of migrating birds are nothing short of astounding. And the southern coast offers a number of important, though now much reduced, estuaries and coastal marshes that attract a scintillating variety of species that somehow manage to cope with the onslaught of development and pollution.

Although much could be written, and has been written, about the avifauna of this area, it is laudable that the University of California Press has published the first introductory guide to draw beginners and the general public into an appreciation of this region's birdlife. While there may not be much in this guide for an advanced birder, it is certainly an ideal text for "the hikers, naturalists, residents, and travelers" listed on the back-cover blurb. The writing is straightforward and jargon-free, with all relevant topics covered in just enough depth to be clear for the first-time student.

Arranged very simply, *Birds of the Southern California Coast* is divided into an Introduction, Species Accounts, and Birding Sites Along the Coast. Appendices provide seasonal bar graphs, a chart of shorebird sizes, and a brief introduction to gull identification. The book covers the area between the southern boundary of Monterey County (near Point Piedras Blancas) and the Mexican border and encompasses common coastal habitats as well as upland habitats on adjacent marine terraces. Accounts of 120 species include all of the most common and characteristic birds found in these habitats.

For its intended audience this book has few faults. It presents the region, its bird life, and basic birdwatching skills with a deft touch that is sure to please any newcomer. Clear, well-chosen photos by Don DesJardin provide a strong visual element to the species accounts, while the excellent maps and illustrations round out the overall appeal of this guide.

The introductory section on "How Coastal Birds Live" is particularly interesting in its detail. For instance, the statement that "Ornithologists speculate that feeding in different localities on the mudflats may lessen the competition for food sources in a uniform habitat," is followed by a fairly sophisticated description of the niches used by various species and the specific foods found in each niche. This level of information is insightful and informative in a way that both welcomes beginners yet provides facts that even experts find useful. Likewise, descriptions of migrating seabirds, shorebirds,

and waterfowl are so juicy that they will make readers itch for days in the field regardless of their level of expertise.

Overall, however, this book suffers from a fate common to many introductory guides: an overemphasis on "basic" rather than "introductory." To wit, why must introductory guides diminish the intellectual rigor of their subjects rather than lead the newcomer into a growing appreciation of the topic with some degree of vigor?

Although the text in this book is well written and technically correct, it is often simplified to the point of blandness. For instance, the species account for the Gadwall simply calls it a "fairly common migrant," when the text could have just as easily mentioned important information like arrival and departure dates, abundance, or habitats used—not to mention its recent explosive increase in the area as a breeding species. It's not clear why such facts aren't considered part of an introduction to the region's bird life.

Other examples include statements like, "Between the headlands are beaches, where sand is deposited by waves." Elsewhere, estuaries are described merely as places where "there is a constant ebb and flow of freshwater and saltwater" with few other details. Likewise, I found sentences like "Eared and Horned Grebes are separated in winter plumage by their cheek patches," not terribly useful because readers are given no additional details.

When applied to the species accounts, this kind of language fills up a lot of unnecessary space with sentences such as those that begin the Canada Goose account and continue for one-third of a page: "In pastures in December or January, a loose flock of geese walks slowly among the stubble. As the geese feed, they bend their long necks to nibble at the waste grain." Ultimately, this doesn't leave much space for the kinds of fine points and facts that could make a beginner excited, or even knowledgeable, about a new subject. For example, the Barn Swallow account is notably more interesting when it talks about how the tail length of male Barn Swallows in Europe has increased by 10% in the past 20 years in an amazing show of rapid evolutionary change!

This emphasis on "basic" carries over into the selection of topics found in the introduction, where there are sections on "Birding Basics" and the kinds of binoculars and field guides to buy. Haven't these topics been discussed countless times in other books, and why are they important in an introduction to the birds of the southern California coast? The space could have been better used truly introducing the habitats and lives of the region's birds.

The concluding chapter "Birding Sites Along the Coast" is a stand-out section that will recommend this book to even the most accomplished birders. Excellent maps, clear directions, and plenty of local contact information make this chapter a valuable resource for finding the best birding sites along the southern California coast. This section will also make the book useful for out-of-town visitors who are trying to find those locations casually mentioned on rare bird reports and hotlines.

Finally, the appendices on shorebird sizes and gull identification are odd additions. It's not exactly clear why a reader would want a table listing the relative sizes of the shorebirds mentioned in the book, or why the table wasn't instead included with the section that introduced the shorebird species accounts. The gull identification appendix seems to want make the point simply that "True gull aficionados will wish to study gull plumage changes in depth. For beginners, however, the intricacies of gull identification can be overwhelming." If essential to the book, the gull appendix at the very least would have benefited from a sequence of photographs introducing the ways that gull plumages change with age.

These quibbles aside, *Introduction to Birds of the Southern California Coast* is a solid, though in places overly simplified, book that would make a great gift for a beginning birder, newcomer to the area, or first-time visitor. And even advanced birders will find the section on southern California birding locations invaluable.

David Lukas

FEATURED PHOTO

IDENTIFICATION AT SEA OF HAWAIIAN AND GALAPAGOS PETRELS

MICHAEL P. FORCE, 6515 Bulyea Avenue, Peachland, British Columbia V0H 1X7
SOPHIE W. WEBB, Oikonos, 400 Farmer Street, Felton, California 95018
STEVE N. G. HOWELL, P. O. Box 423, Bolinas, California 94924

Petrels of the genus *Pterodroma* are among the most enigmatic of seabirds, often nesting on remote islands, ranging far from land, and posing identification challenges. The Hawaiian and Galapagos populations of the Dark-rumped Petrel (*Pterodroma phaeopygia*) were recently elevated to species rank by the AOU (2002) as the Hawaiian Petrel (*P. sandwichensis*) and the Galapagos Petrel (*P. phaeopygia*), respectively (we use the term "Dark-rumped Petrel" hereafter to refer to the species pair). These taxa appear very similar, and some authors have considered them "doubtfully distinct" at even the subspecies level (Jouanin and Mougin 1979). The Galapagos Petrel averages larger in linear dimensions, whereas the Hawaiian Petrel averages heavier (Simons and Hodges 1998, Tomkins and Milne 1991). There is considerable overlap in all standard measurements, however, and no single variable is sufficient to support the recognition of the two populations as subspecies by the standard 75% rule when the formula presented by Patten and Unitt (2002) is applied to the measurements tabulated by Tomkins and Milne (1991). Genetic and vocal differences have also been reported (Browne et al. 1997, Tomkins and Milne 1991). Here we offer preliminary suggestions for distinguishing these taxa at sea. We believe the characters we describe here will enable the specific identification of birds seen reasonably well, and we encourage observers to test and refine our criteria. We were unable to obtain good photos from Hawaiian waters and have instead used photos from California, which show the characters of the (presumed) Hawaiian Petrels we have seen around Hawaii. The upper photo on this issue's back cover of a presumed Galapagos Petrel was taken by George Armistead on 21 July 2005 near Isla San Cristobal, Galápagos; the lower photo of a presumed Hawaiian Petrel was taken by Malcolm and Michael Boswell off Fort Bragg, Mendocino County, California, on 13 August 2006.

In their original description of the Hawaiian Petrel, Baird et al. (1884) compared one specimen from Hawaii with the Black-capped Petrel (*P. hasitata*) and did not mention the Galapagos Petrel at all. Salvin (1896) listed *sandwichensis* as a synonym of *phaeopygia*. Bryan (1908) revived the name *sandwichensis*, reporting that the Hawaiian birds have more slender bills with thinner, less prominent nostrils and a more strongly deflected terminal nail. He reported that Hawaiian specimens have pure white axillars, lacking the slaty black terminal bands on three or four of these feathers present on Galapagos specimens. Bryan had only one specimen of *phaeopygia* for comparison, however. Loomis (1918) noted overlap in measurements and discredited the differences in color, emphasizing the extent of individual variation and the effect of plumage wear. From 1918 to 2002 the two taxa were ranked as subspecies. No differences in plumage color or pattern have been discussed in the literature since 1918.

We have all seen many Dark-rumped Petrels at sea since 1989, but only in recent years have we looked critically for differences between birds observed around the Hawaiian Islands (presumed Hawaiian Petrels) and birds observed around the Galapagos Islands (presumed Galapagos Petrels). Since 2003, Force and Webb studied 207 presumed Hawaiian Petrels and 303 presumed Galapagos Petrels in their respective ranges, and Howell has seen three Dark-rumped Petrels off California.

In addition, Howell has examined most specimens of these taxa housed in North American museums.

Given reasonable views, Dark-rumped Petrels appear fairly distinctive at sea, although a fresh-plumaged bird with frosty gray upperparts can suggest the somewhat larger and bulkier Juan Fernandez Petrel (*P. externa*), which has a head pattern similar to that of the Hawaiian Petrel (see below). And as their plumage wears Juan Fernandez Petrels become darker and browner on the upperparts, more like a Dark-rumped Petrel. A clear view of the underwing should resolve any identification dilemma: the Juan Fernandez Petrel has mostly white underwings lacking the wide blackish underwing margins of the Dark-rumped.

Plumage. Perhaps the most obvious plumage difference is the pattern on the sides of the head and neck, although a good view is still needed to see and evaluate this feature. On Galapagos Petrels the blackish-brown cap extends diagonally down and back from below the eyes, merging with the dark gray-brown sides of the neck to form an extensive dark hood (back cover upper photo and Figure 1). On Hawaiian Petrels the blackish-brown cap is smaller (the dark extends less below the eye), and white from the neck sides cuts up behind the cap, forming a notch between the cap and the dark sides of the neck, which often appear grayer than on Galapagos Petrels; the gray tends to project down as a bulge forward of the wings (back cover lower photo and Figures 2 and 3). The gray sides of the neck of both species are darker and browner overall in worn plumage. The dark hood of the Galapagos Petrel thus recalls that of a Gould's Petrel (*P. leucoptera*), whereas the cap of the Hawaiian Petrel recalls that of a Juan Fernandez Petrel. At some angles (such as when viewed from below, going away), the cap of Hawaiian Petrels appears "flat," without a bulge on

Figure 1. Presumed Galapagos Petrel off Isla San Cristobal, Galápagos, 19 August 2006. Note the shape of the hood and the bill thicker than in Figure 2.

Photo by George Armistead

Figure 2. Presumed Hawaiian Petrel off Fort Bragg, Mendocino County, California, 13 August 2006. Note the cap shape and fairly slender bill.

Photo by Malcolm and Michael Boswell

the sides of the neck (Figure 4), but this is still distinct from the angled dark hood of a Galapagos Petrel. The head and neck pattern of Galapagos Petrels is rather variable, and some have very extensive dark hoods with dark markings extending in a broken band across the chest (figure 6 of Tomkins and Milne 1991). Even the most lightly marked Galapagos Petrels, however, apparently show a hood distinct from the cap typical of the Hawaiian. These differences in head and neck pattern are difficult to appreciate on museum specimens, which typically have the head and neck somewhat scrunched, but even on specimens the depth of the black cap or hood below the eye is usually less than the eye's depth on the Hawaiian ("capped"), greater on the Galapagos ("hooded").

Another plumage difference that may be helpful involves the width of the dark trailing edge to the secondaries, which often appears relatively broad on Galapagos Petrels, perhaps because of their broader wings, in which the dark secondaries may project more past the tips of the white greater underwing coverts. This feature requires critical evaluation and is also affected by wear and molt, which can be difficult to assess at sea. Nevertheless it may be useful for identifying birds from good photos. One must also keep in mind the effects that different lighting and distance can have on one's impression of a bird seen at sea; for example, on distant Galapagos Petrels the black underwing margins often appear narrower.

Our impression is that at sea Galapagos Petrels often show noticeable dusky smudging or scalloping on the anterior flanks, whereas Hawaiian Petrels do not show any appreciable dark markings there (cf. back cover photos and Figures 4 and 5). Though Bryan (1908) reported this as a consistent difference, Peter Pyle (pers. comm.) found that 17 of 32 specimens of the Hawaiian Petrel from Hawaii (53%) had dark flank markings; more study on this character is needed.

It has been reported that Galapagos Petrels typically have dark forehead spotting

Figure 3. Presumed Hawaiian Petrel off Ventura County, California, 6 September 2006. Note the cap shape; this bird's bill is appreciably thicker than that of the bird in Figure 2.

Photo by Steve N. G. Howell

whereas Hawaiian Petrels have clean white foreheads (Howell and Pyle 1997). Examination of larger samples shows this to be only an average difference and thus not helpful on an individual bird: 134 of 188 Galapagos Petrel specimens (71%) at the California Academy of Sciences had black spotting on the forehead (usually down the midline of the white forehead blaze), while eight of 32 Hawaiian Petrel specimens (25%) at the Bernice P. Bishop Museum in Hawaii had black spotting (P. Pyle, pers. comm.). The pattern of the forehead is affected greatly by plumage wear as the feathers have white tips, a dark subterminal area of varying size, and white bases. Both species can show white mottling on the uppertail coverts, which results from exposure of the white bases of the coverts and varies with plumage wear and molt. The undersides of the primaries of both taxa can be dark, contrasting with the white primary coverts, or tongues of white may extend out on the primaries' inner webs (see back cover photos). Although these white tongues may average more extensive on the Galapagos Petrel, there appears to be enough overlap that this is not a reliable mark (P. Pyle pers. comm.).

Size, shape, and manner of flight. Given the vagaries of bird behavior, wind speed, wind direction, and observer experience, the following characters may be helpful but not definitive. The Hawaiian Petrel often appears a little smaller and "zippier" in flight than the larger, rangier, and more "leisurely" Galapagos. This difference is mostly a function of wing-loading, that is, a bird's wing area divided by its mass. Lower wing-loading is characteristic of petrels (such as the Galapagos) that range over equatorial and tropical waters where winds are generally light; higher wing-loading is characteristic of petrels (such as the Hawaiian) that range over subtropical and temperate

Figure 4. Presumed Hawaiian Petrel off Ventura County, California, 6 September 2006. Note the shallow dark cap and how the cap's apparent shape changes depending on the angle of view (cf. Figures 2 and 3).

Photo by Steve N. G. Howell

waters where winds tend to be stronger (Spear and Ainley 1998).

Sometimes Galapagos Petrels appeared to us distinctly long tailed but at other times they looked relatively short tailed (perhaps because of their wider wings); conversely, Hawaiian Petrels often appeared long tailed, an effect perhaps accentuated by their narrower wings In addition, at certain angles the wings of Hawaiian Petrels occasionally appeared broad based, contributing to their short-winged look. The Galapagos averages stouter billed than the Hawaiian, but measurements overlap extensively; bill size might be a supportive feature for extremes.

Distribution and habitat at sea. Pitman (1986) and Spear et al. (1995) mapped the Dark-rumped Petrel's pelagic distribution and noted a distinct break between the ranges of presumed Hawaiian and Galapagos petrels. They reported presumed Hawaiian Petrels between the equator and 30° N (the northern boundary of those authors' study areas). It is now known that the Hawaiian ranges widely in the North Pacific (Spear et al. in press), and the northernmost sighting of a presumed Hawaiian Petrel is about 140 km south of Yanuska Island in the Aleutians (Force pers. obs., NOAA unpubl. data). Tagging of breeding Hawaiian Petrels with radiotransmitters tracked by satellite has shown that in August and September some birds range north to around 51° N, and one individual was tracked to within 660 km of the Oregon coast (J. Adams et al. unpubl. data). The pelagic range of presumed Galapagos Petrels is not known to extend north of about 20° N, over waters well off western Mexico, and this species occurs where the thermocline is shallower and winds are lighter than in the range of the Hawaiian Petrel (Spear et al. 1995). Dark-rumped Petrels photographed off California (e.g., Figures 2 and 3) show features of presumed Hawaiian

Figure 5. Presumed Galapagos Petrel off Isla San Cristobal, Galápagos, 19 August 2006. Note the hood shape and dark flank markings.

Photo by George Armistead

Petrels observed around Hawaii and are distinct from presumed Galapagos Petrels. Distribution at sea, habitat, and satellite tracking also support the identification of these birds as Hawaiian Petrels.

The observations of Force and Webb were made on cruises sponsored by the Protected Resources Division at the Southwest Fisheries Science Centre, National Marine Fisheries Service, La Jolla, California, under the direction of Lisa T. Ballance. We also thank George Armistead and Malcolm and Michael Boswell for kindly contributing photos to this note, Debra Shearwater and Shearwater Journeys, the Cordell Bank Marine Sanctuary, Todd McGrath, and the crew of the *Searcher* for logistical support, Josh Adams and David G. Ainley for sharing unpublished data, Maureen Flannery and John P. Dumbacher at the California Academy of Sciences for access to specimens, David G. Ainley, Kimball L. Garrett, Todd McGrath, Peter Pyle, and Philip Unitt for their review of this note, and Pyle for his study of the Hawaiian Petrel specimens in Hawaii. This note is dedicated to the memory of Larry B. Spear, a mentor to Webb and Howell and a remarkable seabird biologist who shared our love of *Pterodroma* petrels.

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Back cover "Featured Photos" by © George Armistead of Philadelphia, Pennsylvania: Galapagos Petrel (*Pterodroma phaeopygia*), near Isla San Cristobal, Galápagos, 21 July 2005 (top); and © Malcolm and Michael Boswell of Kitimat, British Columbia: Hawaiian Petrel (*Pterodroma sandwichensis*), off Fort Bragg, Mendocino County, California, 13 August 2006 (bottom).

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Front cover photo by © Bob Steele of Inyokern, California: Streak-backed Oriole (*Icterus pustulatus*), Zzyzx, San Bernadiuo County, California, 13 October 2006.

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ARIZONA BIRD COMMITTEE REPORT, 2000–2004 RECORDS

GARY H. ROSENBERG, P.O. Box 91856, Tucson, Arizona 85752-1856; ghrosenberg@comcast.net

KURT RADAMAKER, 16313 E. Crystal Point Dr., Fountain Hills, Arizona 85268; kurtrad@mexicobirding.com

MARK M. STEVENSON, 4201 E. Monte Vista Dr., J207, Tucson, Arizona 85712; drbrdr@worldnet.att.net

ABSTRACT: This sixth report of the Arizona Bird Committee updates previous reports of birds unusual in Arizona through 2004. The 279 accepted reports include eight species new to Arizona, bringing the state's bird list to 530 species.

This is the sixth published report of the Arizona Bird Committee (hereafter ABC) (see Speich and Parker 1973, Speich and Witzeman 1975, Rosenberg and Witzeman 1998, Rosenberg and Witzeman 1999, and Rosenberg 2001). It covers records mainly from 2000 through 2004 but also includes some recently reviewed records from prior to 2000. We report here on 331 reports submitted to the ABC, of which 279 (84%) were accepted. Eight species were added to the Arizona list: the Cackling Goose (*Branta hutchinsii*), Trumpeter Swan (*Cygnus buccinator*), Glossy Ibis (*Plegadis falcinellus*), Buff-breasted Sandpiper (*Tryngites subruficollis*), Ruby-throated Hummingbird (*Archilochus colubris*), Black-capped Vireo (*Vireo atricapillus*) (reinstated), Eastern Towhee (*Pipilo erythophthalmus*), and Nelson's Sharp-tailed Sparrow (*Ammodramus nelsoni*). Additionally, one new subspecies was accepted for the state, the Mangrove Yellow Warbler (*Dendroica petechia* presumably *rhizophorae*). Other highlights in this report include acceptance of Arizona's third and fourth Yellow-billed Loons (*Gavia adamsii*), third Sharp-tailed Sandpiper (*Calidris acuminata*), fourth and fifth Ruffs (*Philomachus pugnax*), second Western Gull (*Larus occidentalis*), fourth and fifth Elegant Terns (*Thalasseus elegans*), second and third Great Crested Flycatchers (*Myiarchus crinitus*), third Great Kiskadee (*Pitangus sulphuratus*), third Blue-headed Vireo (*Vireo solitarius*), second Carolina Wren (*Thryothorus ludovicianus*), second Red-throated Pipit (*Anthus cervinus*), fifth Slate-throated Redstart (*Myioborus miniatus*), second

Le Conte's Sparrow (*Ammodramus leconteii*), and second Snow Bunting (*Plectophenax nivalis*). We also report on the rapid change in status of the Short-tailed Hawk (*Buteo brachyurus*), which has gone from one record to nesting in the state, and the explosive colonization of the Eurasian Collared-Dove (*Streptopelia decaocto*), which is now found almost statewide in rapidly increasing numbers.

The current Arizona Bird Committee (2007) consists of Charles Babbitt, Gavin Bieber, Chris D. Benesh, Henry Detwiler, Kurt Radamaker, Gary H. Rosenberg (secretary), Dave Stejskal, and Mark M. Stevenson. Recent committee members who also voted on records in this report include Troy Corman, Narca Moore-Craig, Tony Godfrey, Rich Hoyer, Roy Jones, Ken Kertell, Dave Krueper, Chuck LaRue, and Will Russell. Janet Witzeman serves in a nonvoting capacity as assistant secretary.

The ABC's list of reviewed species can be found on its web page, www.azfo.org/ArizonaBirdCommittee/index.html. Included on this web site as well are the Arizona state list, the ABC's bylaws, a list of current committee members, a brief history of the ABC, the past five reports by the ABC (as published in *Western Birds*), and a selection of photographs of rarities from Arizona. A new state organization, Arizona Field Ornithologists, is in its fledgling stage, with information available at www.azfo.org. An electronic reporting form is available at that site at http://azfo.org/ABCReports/mailer.aspx.

The ABC encourages observers to submit documentation for species on the review list, as well as species new for Arizona. All material should be sent to Gary H. Rosenberg, ABC secretary, P.O. Box 91856, Tucson, AZ 85752-1856 (e-mail ghrosenberg@comcast.net). The committee would like to emphasize the importance of submitting documentation of sightings for review directly to the ABC. The posting of reports, including those with written descriptions, on local "listservs" may not safely be assumed to have been discovered by the ABC nor safely be assumed to be interpreted as documentation of a rarity. The ABC prefers reports submitted directly to the committee or to the regional editor of *North American Birds* (who forwards the material on review-list species to the secretary of the ABC). The ABC thanks the many observers from Arizona and around North America who have submitted their documentation of sightings to the ABC.

Each record listed below includes a locality, county (abbreviation: see below), date (span normally as published in *North American Birds*), and initial observer if known. Additional observers who submitted written reports (as indicated by the symbol †), photographs, video recordings, and sound recordings are also listed. All records are sight reports unless noted otherwise with a symbol for a photograph, sound recording, or specimen. It has generally been customary for the ABC to review reports of individual birds returning for multiple successive years, and these dates are normally included within the accounts. The new ABC policy will be to review individuals for multiple years *if* the individual has left and then returned. Individuals that persist for multiple years without leaving will not be reviewed again. In most cases, the total number of records in the state for a species includes both the number of records accepted by the ABC and the number published in *Birds of Arizona* (Phillips et al. 1964) or the *Annotated Checklist of the Birds of Arizona*

(Monson and Phillips 1981), so that records prior to the inception of the ABC are included. The ABC emphasizes that a report listed in the "reports not accepted" section does not necessarily mean that the members of the ABC "do not believe" the observer but indicates that the documentation supplied to the committee for evaluation may not be detailed enough, or meet the rigorous standards established individually and independently by each member of the committee, to substantiate the sighting as a formal historical record. The ABC attempts to be fair and objective with regard to evaluation of all reports.

The ABC's abbreviations for counties in Arizona are APA, Apache; COS, Cochise; COC, Coconino; GIL, Gila; GRA, Graham; GRE, Greenlee; LAP, La Paz; MAR, Maricopa; MOH, Mohave; NAV, Navajo; PIM, Pima; PIN, Pinal; SCR, Santa Cruz; YAV, Yavapai; YUM, Yuma. Other nonstandard abbreviations used within this report: *, specimen; S.T.P., sewage-treatment plant; s.r., sound recording; UA, University of Arizona; v.t., video tape.

RECORDS ACCEPTED

CACKLING GOOSE *Branta hutchinsii*. With the recent taxonomic split of Cackling Goose from the larger Canada Goose (*Branta canadensis*) (see Banks et al. 2004), the ABC will now review reports of all "small" white-cheeked geese. A single individual at Kino Springs, SCR, 27 Dec 1998–20 Feb 1999 (ph. MMS) constitutes Arizona's first accepted record. An additional report accepted is of a single individual at Fountain Hills, MAR, 21 Jan–24 Feb 2003 (ph. KR). Prior to 2005, "small" white-cheeked geese were not reviewed by the ABC, so the true status of the Cackling Goose in Arizona is not well known. Monson and Phillips (1981) treated the Cackling Goose as a full species, listing two specimen records of the subspecies *minima* from Arizona. The difficulty of distinguishing *Branta canadensis parvipes* from *B. h. taverneri* adds additional complication. The ABC encourages observers to document all sightings of the Cackling Goose in Arizona fully.

TRUMPETER SWAN *Cygnus buccinator*. The status of Trumpeter Swan in Arizona has been a contentious issue, with much discussion by the ABC regarding the identification and origin of reported birds. The report of a single unbanded immature at Willow Tank near Portal, COS, 19 Dec 1994 (ph. AM) was accepted on its third circulation as Arizona's first record, at least in part on the basis of discussions with Trumpeter Swan experts Ruth Shea and Rod Drewien (Trumpeter Swan Society) regarding the "hazing" of family groups in the Green River region of Wyoming. Other accepted records are of an unbanded adult found dead at Gleeson, COS, 1 Jan 1998 (SW; *UA), and of a group of four (two adults, one immature, and one banded bird) at Camp Verde, YAV, 30–31 Dec 2002 (KF, JGr, EM; ph. MMS). The ABC considers the Trumpeter Swan's occurrence in Arizona a result of dispersing "wild" populations, not of individuals from "translocated" populations, unless band data show otherwise.

YELLOW-BILLED LOON *Gavia adamsii*. Individuals were at Lake Mojave above Davis Dam, MOH, 13 Mar 2000 (ph. MC), accepted on a second round, and at Lake Havasu City, MOH, 1 Feb 2002–13 Apr 2002 (ph. MMS, ph. SD; see *N. Am. Birds* 56:204). These represent only the third and fourth Arizona records.

LEAST GREBE *Tachybaptus dominicus*. Accepted reports of this diminutive grebe were of single birds at Sweetwater Wetlands, Tucson, PIM, 13 Jun–23 Jul 2000 (ph. MMS, GCo, TS), at that same location 8 May 2002–8 Aug 2002, there again during the winter of 2002–03 (†BZ, KZ, ph. GHR; see *N. Am. Birds* 57:239), Sam Lena Park, Tucson, PIM, 19 Apr–11 Oct 2003 and intermittently through 2004 (†GB; ph.

MMS, ph. GHR), Kino Springs, Nogales, SCR, 8 Jul 2004–15 Jul 2004 (MHy, ph. MMS), and Kearny Lake, PIN, 24–26 Nov 2004 (MPe, ph. MK). We consider the records for the Sweetwater Wetlands to pertain to the same individual. This brings the total number of records accepted from Arizona to 14.

RED-NECKED GREBE *Podiceps grisegena*. One at Lake Pleasant, MAR, 23 Feb 1998 (†RC) was well described and represents the seventh Arizona record.

RED-BILLED TROPICBIRD *Phaethon aethereus*. An immature was picked up alive in Yuma, YUM, 22 Feb 2000 (ph. RHe; *UA; see *N. Am. Birds* 54:207), after being downed by a Pacific storm that passed over Yuma the preceding day. The Red-billed Tropicbird breeds in the northern Sea of Cortez and, like other pelagic species that occur in the gulf, has strayed casually to the lower Colorado River.

FRIGATEBIRD *Fregata sp*. An apparent adult male frigatebird was photographed at Mammoth, PIN, 11 May 2004 (ph. JL). Although the frigatebird expected in Arizona is clearly the Magnificent (*F. magnificens*), the lack of written details for this sighting and the relatively distant and low-resolution photographs do not eliminate the similar Great Frigatebird (*F. minor*), which has occurred in North America at least three times, including a specimen from Oklahoma (Alderfer 2005). The ABC decided it was prudent to accept this individual as a frigatebird but not to assign it to species.

REDDISH EGRET *Egretta rufescens*. Reports of this species in southern and central Arizona have proliferated in recent years. Accepted records, all of immatures, are of one at Lake Mojave, MOH, 30 Sep 1999 (†SGo), one at Gilbert Water Ranch, MAR, 27 Aug 2001 (†JSm), one at Roosevelt Lake, GIL, 5 Sep–3 Oct 2001 (ph. GHR), one at Picacho Reservoir, PIN, 21 Oct–22 Nov 2001 (B&LW; ph. MMS), one along the Gila River near the Route 95 bridge, YUM, 31 Aug–12 Sep 2002 (DT, †MMS; ph. HD), one to two at Paloma Ranch, MAR, 8–12 Oct 2002 (ph. HD), one at Lakeside Park, Tucson, PIM, 11–12 Oct 2003 (†MMS; ph. MMS, ph. CDB), one at Paloma Ranch, MAR, 2 Jan 2004 (ph. BGr; see *N. Am. Birds* 58:266), one at Avra Valley S. T. P., PIM, 28 Jun–6 Jul 2004 (RF; ph. MMS), two at Paloma Ranch, MAR, 4 Jul 2004 (†BGr; ph. PMo, ph. BGr, ph. PD), one at Dateland, YUM, 9–13 Jul 2004 (ph. HD, DS), and one at Lakeside Park, Tucson, PIM, 9–22 Jul 2004 (ph. MMS). These more than double the number of records from Arizona, bringing the total to 23.

WHITE IBIS *Eudocimus albus*. Accepted records are of a single adult near Arlington, MAR, 27 Dec 2003–19 Jan 2003 († D&JL; ph. TC, MMS) and what was likely the same individual at Palo Verde, MAR, 10 May 2003 and again 27 Nov 2004 (EC, D&JL; ph. PD). There were only six previous records from Arizona.

GLOSSY IBIS *Plegadis falcinellus*. Arizona's first documented Glossy Ibis was an adult at Arlington, MAR, 19–21 May 2001 (ph. RJ; †MMS; v. t. GHR; Figure 1). The next accepted report was of a molting adult in southwest Phoenix, MAR, 11 Aug 2001 (†TC). The Glossy Ibis has spread west significantly in recent years (Patten and Lasley 2000), with accepted California records now totaling six (Cole et al. 2006). The latter include at least two near Arizona in the Imperial Valley (San Miguel and McGrath 2005). The identification of the Glossy Ibis in Arizona, as well as other western states, requires caution because of known hybridization between Glossy and White-faced (*P. chihi*) Ibises (see Arterburn and Grzybowski 2003, Faulkner 2005). At least one ibis showing the characters of other presumed hybrids has been documented in Arizona (at Willcox, COS, 18 Jul 2004; ph. JLD).

ROSEATE SPOONBILL *Platalea ajaja*. Accepted records are of two along the Gila River near El Mirage Rd., southwest Phoenix, MAR, 10 Sep 2000 (ph. BGr), three at Arthur Pack Golf Course, Marana, PIM, 22–23 Jul 2004 (RWe; ph. MMS, ph. GHR; see *N. Am. Birds* 58:632), and one at Nogales, SCR, 23 Aug–22 Sep 2004 (MG; ph. WT, ph. MMS; see *N. Am. Birds* 59:126). Although this species was considered

Figure 1. This adult Glossy Ibis at Arlington, Maricopa County, 19–21 May, 2001 provided a first record for Arizona.

Photo by Roy Jones

a semiregular post-breeding summer wanderer from Mexico during the 1970s, there have been fewer than ten accepted records for the state since 1990.

WOOD STORK *Mycteria americana*. One was at Roosevelt Lake, GIL, 20–21 Aug 2002 (ph. JEs, v.t. MPo). Earlier in the 20th century the Wood Stork was a regular postbreeding visitor to the lower Colorado River (Phillips 1964, Rosenberg et al. 1991) and to the Salton Sea in California, but source populations in Mexico have declined dramatically over the last 50 years and continue to shrink (Patten et al. 2003). Since 1990 there have only been four reports of this species from Arizona.

RED-SHOULDERED HAWK *Buteo lineatus*. Accepted records are of an immature at Page, COC, 18 Sep 2000 (†CL), an adult at Hassayampa River Preserve, Wickenburg, MAR, 6 Dec 2000 (ph. MMS; one of two individuals reported at this location for at least a year), an immature along the Santa Cruz River, Tucson, PIM, 3 Nov 2002 (WR; ph. GHR), an immature at Katherine Landing, MOH, 3 Dec 2002 (†MMS, MPo), an adult at Green Valley, PIM, 10–28 Dec 2002 (RWo, †MMS; ph. KKe), one at Patagonia, SCR, 18 Dec 2004 (†EW), and one along Granite Creek near Prescott, YAV, 16 Oct–13 Dec 2004 (†CT). The Red-shouldered Hawk continues to gradually expand east into agricultural regions of the arid desert West (Patten et al. 2003) from cismontane California. Most if not all of the birds reported in Arizona appear to originate from this population, subspecies *B. l. elegans*.

BROAD-WINGED HAWK *Buteo platypterus*. Recent accepted records from the Grand Canyon, where, on the basis of recent hawk-watching counts (Hawk Watch

International), this species may occur annually, are of single immatures at Yaki Point, COC, 14 Sep 2001 (ph. CVC) and Lipan Point, COC, 25 Sep 2002 (ph. CVC; see *N. Am. Birds* 57:100). The only other records accepted were of an adult picked up alive in Chandler, MAR, 26 Jan 2003 (ph. AP), a surprise as most prior winter reports of this species in the West are of immatures, and another adult in north Tucson, PIM, 7 Oct 2003 (†RHo). The ABC would still like to review all reports of this species in the state away from the Grand Canyon hawk-watch stations.

SHORT-TAILED HAWK *Buteo brachyurus*. Two Short-tailed Hawks photographed in Miller Canyon, COS, Jul–Sep 1999, were the first of their species documented in Arizona with more than a sighting (Rosenberg 2001). The ABC re-evaluated and accepted two prior sight reports that it had reviewed but previously not accepted, of single adults near Barfoot Junction, Chiricahua Mts., COS, 7 Aug 1985 (†JA), and in Sawmill Canyon, Huachuca Mts., COS, 21 Jul 1988 (†JLD). Another accepted report predating the photograph from Miller Canyon birds is of one light-morph bird near Onion Saddle, Chiricahua Mts., COS, 5 Apr 1999 (†ML), with likely the same individual reported near Onion Saddle, COS, 22 Aug 1999 (†CDB). Subsequent accepted records are of a juvenile in Carr Canyon, Huachuca Mts., COS, 5 Aug–3 Sep 2001 (FG, †CDB), another adult and juvenile at Barfoot Park, COS, 21–25 Aug 2001 (†CDB, †KH, JHv, BSc), two light-morph individuals at Barfoot Park, COS, from 31 Mar through at least Aug 2002 (CMi, RT; ph. CDB, ph. JBu; see *N. Am. Birds* 57:144; Figure 2), an adult (28 Jun 2003) along with two juveniles at Barfoot Park, COS, 7–16 Aug 2003 (ph. RHo), and two adults at Barfoot Park, COS, 1 May through at least 3 Jul 2004 (ph. BSu, ph. RS). These reports suggest the likely success-

Figure 2. The status of the Short-tailed Hawk in Arizona has changed in recent years, with at least one pair returning to the Chiricahua Mountains apparently to breed. This adult was at Barfoot Park August 2002.

Photo by Jim Burns

ful nesting of the Short-tailed Hawk in Arizona (although no nest has yet been found), as well as an almost annual presence in the Barfoot Park region of the Chiricahua Mts. since 1999. Williams et al. (2007) reviewed the species' spread north.

PURPLE GALLINULE *Porphyrio martinica*. A single juvenile at the Sweetwater Wetlands, Tucson, PIM, 26 Jul–21 Aug 2002 (BSh, †MMS; ph. JHa) provided only the tenth documented state record. An erroneously published record of one from Gila Farms Pond near Phoenix, MAR, 1–3 Aug 1991 (Rosenberg and Witzeman 1998) had in fact not been accepted by the ABC.

AMERICAN GOLDEN-PLOVER *Pluvialis dominica*. Accepted records of this casual migrant are of one in basic plumage at Whitewater Draw Wildlife Area, COS, 26 Apr–7 May 2000 (DW; ph. MMS), two juveniles at Palo Verde/Arlington, MAR, 27–28 Oct 2002 (ph. BGr, ph. GB), one juvenile at Paloma Ranch, MAR, 20 Sep 2003 (ph. BGr), and one at Willcox, COS, 24–26 Mar 2004 (RWb; ph. JWo, ph. MMS). A previously published report of this species from Willcox 16 Sep 1992 (Rosenberg and Witzeman 1998) had in fact been accepted only as an unidentified golden-plover, not as an American.

UPLAND SANDPIPER *Bartramia longicauda*. One at Buenos Aires National Wildlife Refuge, PIM, 9 May 1989 (†DAS) was accepted on the second round. This record had been published erroneously as accepted in a previous report (Rosenberg and Witzeman 1998). Only two additional Upland Sandpiper records have been accepted by the ABC, as well as a few older specimens and sight reports listed by Monson and Phillips (1981).

RED KNOT *Calidris canutus*. One juvenile was at Willcox, COS, 25–30 Sep 2004 (JHi, ph. NH). Records of the Red Knot in Arizona are remarkably few (<20) in light of the species' abundance along the Sea of Cortez and the neighboring Salton Sea.

Figure 3. Arizona's seventh White-rumped Sandpiper was at Willcox, Cochise County, 15–26 May 2003.

Photo by Gary Rosenberg

WHITE-RUMPED SANDPIPER *Calidris fuscicollis*. One at Sierra Vista S. T. P., COS, 16–17 May 2000 (†KZ, †BZ; ph. MMS, ph. BZ) and one at Willcox, COS, 15–26 May 2003 (ph. DS, ph. GHR; see *N. Am. Birds* 57:387; Figure 3), were both well documented and fit the established timing of spring occurrence in Arizona of mid-May to early June (the earliest being 13 May). There were only five previously accepted Arizona records.

SHARP-TAILED SANDPIPER *Calidris acuminata*. A juvenile of this palearctic species was at Paloma Ranch, Gila Bend, MAR, 2–3 Nov 2003 (ph. BGr; †, ph. RHo, †, ph. RJ, ph. MMS; see *N. Am. Birds* 58:122) providing just the third Arizona record (all from Maricopa County).

BUFF-BREASTED SANDPIPER *Tryngites subruficollis*. Arizona's first documented record was of one juvenile at Paloma Ranch, MAR, 11–12 Sep 2002 (†BGr, †MMS; ph. BGr, ph. RJ). Amazingly, a second juvenile was discovered at Rouseau Sod Farms, Scottsdale, MAR, 22–29 Sep 2002 (†RJ, ph. RDi, GHR; see *N. Am. Birds* 57:100). This species was considered long overdue in Arizona, given its nearly annual occurrence along the coast of southern California.

RUFF *Philomachus pugnax*. Accepted records are of a juvenile at Picacho Reservoir, PIN, 31 Oct 1997 (†DM), accepted on the second round, and of a well-documented juvenile at the Dateland shrimp ponds, YUM, 21 Sep 2004–3 Oct 2004 (†, ph. BGr, ph. GHR, ph. MMS; see *N. Am. Birds* 59:127). These bring the total number of Arizona records to five.

LAUGHING GULL *Larus atricilla*. Records accepted are of one immature at Whitewater Draw Wildlife Area, COS, 26 Jul–13 Aug 2001 (RT, †MMS), two others at Willcox, COS, 2 Jun 2002 (†MMS) and 27 May 2003 (TG; ph. RFa), and one adult at San Carlos Lake, GRA and GIL, 30 Apr 2004 (†KKa). About 20 records have been accepted from Arizona.

MEW GULL *Larus canus*. One in its first winter at Lake Havasu City, MOH, 27 Nov 1999 (ph. PL) establishes about a tenth Arizona record.

WESTERN GULL *Larus occidentalis*. One subadult was at Green Valley S.T.P., PIM, 13–15 Jul 2001 (BSh; ph. MMS). The only other accepted Arizona record was of an immature collected at Parker Dam, LAP, 12 Dec 1946 (*UA).

GLAUCOUS-WINGED GULL *Larus glaucescens*. A juvenile was at Palo Verde, MAR, 23 Nov 2003–2 Jan 2004 (†TC, ph. GHR, ph. RJ, ph. MMS, ph. GB, ph. CDB; see *N. Am. Birds* 58:123). It provided only the sixth record for Arizona and the first since 1981.

BLACK-LEGGED KITTIWAKE *Rissa tridactyla*. An old report of one immature at Painted Rock Dam, MAR, 16 Nov 1980 (†GHR) was accepted. This species has become decidedly scarce in Arizona over the past 20 years, with only six sightings accepted since 1990.

ELEGANT TERN *Thalasseus elegans*. One first-summer individual was at Avra Valley S.T.P., Tucson, PIM, 18–31 Jul 2001 (RT; ph. MMS, ph. GHR; see *N. Am. Birds* 55:506—mislabeled), where it was eventually found dead (*UA), and one was at Whitewater Draw Wildlife Area, COS, 21 Jul 2001 (†KKe). These provided only the fourth and fifth Arizona records for this species.

BLACK SKIMMER *Rynchops niger*. Accepted records are of a juvenile at the Gilbert/Riggs Rd. pond, Chandler, MAR, 14 Oct 2000 (JT, †RJ †RHo; ph. MMS, ph., v.t. RJ) and of an adult at Lakeside Park, east Tucson, PIM, 9 May 2002 (BR; ph MMS; see *N. Am. Birds* 56:338). These bring the total of accepted records in Arizona to seven.

POMARINE JAEGER *Stercorarius pomarinus*. A truly amazing inland sight record of four (one adult) flying along Interstate 19 just north of Green Valley, PIM, 26 Apr 2002 (†LL) was accepted on the second round. The ABC's decision to accept this report without photographic evidence was based partially on a similar accepted record from the north end of the Salton Sea in California, where a flock of 27 Pomarine Jaegers occurred 4 May 1986 (Patten et al. 2003). This establishes a sixth Arizona record and the first for southeastern Arizona.

PARASITIC JAEGER *Stercorarius parasiticus*. One juvenile at Willcox, COS, 11–21 Sep 2002 (†, ph. MMS; ph. SHe, ph. GHR) provided about the tenth Arizona record.

LONG-TAILED JAEGER *Stercorarius longicaudus*. Accepted records are of an adult at Nelson Reservoir, APA, 11 Aug 2002 (ph. DG) and of a juvenile at Ashurst Lake, COC, 28–29 Aug 2004 (JHi, CL; †, ph. JP, ph. JEs; see *N. Am. Birds* 59:128). There were nine previously accepted Arizona records for this species.

EURASIAN COLLARED-DOVE *Streptopelia decaocto*. This dove's rapid expansion across North America has been extraordinary, and its proliferation in Arizona has been no exception. Documented occurrences are of two at Eagar, APA, 11 Mar 2000 (GC, DR; ph. BJ), two at Aguila, MAR, 5 May 2000 (ph. BGr), two at Willcox, COS, 24 Sep 2000 (ph. MMS), one at the Pinal Air Park pecan grove, PIM, 25 Sep 2000 (†CDB), 10 at Fredonia, COC, 26 Nov 2000 (†TC, †MMS), one at Palo Verde, MAR, 20 May 2001 (ph. TC), and one at Roper Lake S.P., GRA, 10 Jan 2002 (†MMS). Because of this rapid expansion in Arizona, and the species' now occurring commonly, but still rather locally, throughout the state, the Eurasian Collared-Dove has been removed from the ABC's review list.

RUDDY GROUND-DOVE *Columbina talpacoti*. One accepted from Portal, COS, 31 Dec 1989 (RSc), and one from Granite Reef Recreation Area, MAR, 17 Dec 1992 (†JWa). After 1996 the ABC discontinued reviewing reports of this now regular visitor and occasional breeder.

GROOVE-BILLED ANI *Crotophaga sulcirostris*. Single birds were in southwest Phoenix, MAR, 23 Nov 2000 (†JZ), at Arivaca, SCR, 16 Jun 2004 (ph. BSp, CS), and at San Pedro House, COS, 22 Oct 2004 (EW, JWh, ph. CMe). There have been very few recent records of this vagrant from Mexico, and it will remain on the review list.

BUFF-COLLARED NIGHTJAR *Caprimulgus ridgwayi*. Accepted records of singing individuals were of one at Chino Canyon, SCR, 16 Jul 2001 (†DQ), accepted on the second round, one at Oro Blanco Mine, SCR, 26 Apr–25 Aug 2002 (KN, JEl, †MMS), another there 26 May–22 Aug (†MMS, RHo), and one along Proctor Rd. below Madera Canyon, PIM, 6–18 Jun 2004 (DCo, BSu, †MMS). Since it was first found in Arizona in 1960, this species has been a scarce and intermittent late spring and summer visitor from Mexico, with breeding being documented only twice. Numbers have seemingly declined since the 1980s, perhaps because of drought (see Corman and Wise-Gervais 2005). Given this recent decline, the Buff-collared Nightjar will remain on the ABC's review list.

BLACK SWIFT *Cypseloides niger*. One was observed in direct comparison with White-throated Swifts (*Aeronautes saxatalis*) at Mormon Lake, Flagstaff, COC, 13 May 2000 (†JGr), and another was observed in a flock of White-throateds at Sky Harbor Airport, Phoenix, MAR, 19 Sep 2001 (†EB). This brings the total number of accepted Arizona records to four, yet there still remains no physical evidence for this species in the state.

BERYLLINE HUMMINGBIRD *Amazilia beryllina*. Accepted records are of a female with a nest at Ramsey Canyon, COS, 22 Apr–14 May 2001 (STu, MPr †MMS; ph. GHR) and another female tending a nest with two young in the same canyon

8–10 Aug 2004 (TMo; ph. JHy). This species remains a casual spring and summer visitor to the canyons of southeastern Arizona. In recent years, multiple apparent hybrids involving the Berylline Hummingbird have been photographed in canyons of the Huachuca Mts., resulting in repeated misidentifications.

PLAIN-CAPPED STARTHROAT *Heliomaster constantii*. Individuals were at the Patons' residence in Patagonia, SCR, 7–16 Oct 1997 (WP; v.t. CDB), at French Joe Canyon, COS, 25 Jul–3 Sep 2001 (BSh, †MMS, †MJI), at Miller Canyon, COS, 29 Jun–2 Jul 2002, where banded (SW, ph. TW, ph. GW), then in Ash Canyon, Huachuca Mts., COS, 12 Jul–3 Sep 2002 (MJB). The banded individual returned to the same feeders in Ash Canyon 19 Jun–17 Sep 2003 (RRo, CSr; ph. MMS, DS, KR, JWo). These bring the total number of accepted records from Arizona to 13, yet no fewer than ten published reports have not been reviewed by the ABC.

RUBY-THROATED HUMMINGBIRD *Archilochus colubris*. Arizona's first Ruby-throated Hummingbird was a female first discovered at a feeder in Tucson, PIM, 20 Dec 2004, confirmed 1 Jan 2005, and remaining there until 14 Apr 2005 (†, ph. RHo; ph. DS, ph. SW; *see N. Am. Birds* 59:306; Figure 4). Close-up photographs, in-hand measurements (SW), and excellent treatment in Pyle (1997) of the identification of this species from the very similar Black-chinned Hummingbird (*A. alexandri*) allowed for the confirmation of this long-sought first state record.

CALLIOPE HUMMINGBIRD *Stellula calliope*. A first-year female frequented a feeder in Tucson, PIM, 15 Dec 2000–13 Apr 2001 (SB, RHo; ph. MMS, BSa, TE), providing Arizona with its second winter record.

Figure 4. This female Ruby-throated Hummingbird was well-studied (including in the hand) 20 December, 2004–14 April, 2005, providing a first record for Arizona.

Photo by Rich Hoyer

EARED QUETZAL *Euptilotis neoxenus*. An adult male was in Miller Canyon, COS, 14 Nov–20 Dec 1999 (MT, STu; ph. MMS; v.t. GHR), and another adult male was in central Arizona along Snake Creek near the Black River, GRE, 24 Aug 2002 (†DCa). About 20 records have been accepted from Arizona, yet only four since 1995.

YELLOW-BELLIED SAPSUCKER *Sphyrapicus varius*. Accepted records are of one at Patagonia Lake, SCR, 21 Jan 2000 (†SMo), one at Kino Springs, Nogales, SCR, 21 Jan–22 Feb 2003 (†RHo; ph. GHR), one in Pasture Canyon, COC, 5 Nov 2003 (ph. JC), one along Sonoita Creek below Patagonia Lake, SCR, 24–31 Oct 2004 (WR; ph. GHR), another there 18 Feb 2004 (†MMS, DS), one in Madera Canyon, SCR, 18 Feb 2004 (ph. RHo), and one at Betty's Kitchen, YUM, 18 Dec 2004 (JCk). This species was removed from the ABC's review list in 2006.

RED-BREASTED SAPSUCKER *Sphyrapicus ruber*. Accepted records are one at the Pinal Air Park pecan grove, PIN, 9–18 Feb 2001 (MPl, ph. DSm, ph. MMS), one in east Tucson, PIM, 10 Feb 2001–4 Mar 2001 (ph. MMS), accepted on the second round, an adult at Oak Flat Campground, PIN, 4 Jan 2004–7 Feb 2004 (PMo, ph. CD, ph. MMS), one at Mittry Lake, YUM, 18 Dec 2004 (†JCk, HD), and one at Betty's Kitchen, YUM, 18-30 Dec 2004 (†JCk, HD). All of these individuals were considered "relatively pure" and within the published degree of individual variation within the Red-breasted Sapsucker (Johnson and Johnson 1985). Because of the high degree of apparent hybridization among sapsuckers, the Red-breasted will remain an ABC review species.

EASTERN WOOD-PEWEE *Contopus virens*. A singing individual well described along the San Pedro R. near Fairbank, COS, 13 Jun 2001 (†JMc) represents only a fourth accepted record for the state.

LEAST FLYCATCHER *Empidonax minimus*. Accepted records include a previously unpublished report of one along the Salt R. near Blue Point, MAR, 22 Dec 1986 (†DS), a nonvocalizing individual described very well by experienced observers along Sonoita Cr. near Patagonia, SCR, 13 May 2000 (†BZ, KZ), one at Page, COC, 14 Sep 2000 (†CL), and a well-described individual at Cameron, COC, 5 Sep 2004 (†JC, CL). Published historical records (Monson and Phillips 1981) of this difficult-to-identify flycatcher include three specimens collected along the Big Sandy Valley, MOH, 20 Oct 1951, one collected in the Tule Mts., YUM, 29 Sep 1956, and one collected in southwest Phoenix, MAR, 12 Apr 1978. The only other sight report accepted by the ABC was of one at Arivaca L., PIM, 28 Nov 1996 (Rosenberg 2001).

GREAT CRESTED FLYCATCHER *Myiarchus crinitus*. A previously published report (Monson and Phillips 1981) of one near Kayenta, NAV, 9 Oct 1980 (†DSt) was reevaluated and accepted by the ABC. Committee members noted the observer's experience, long duration of observation, several supporting field characters (including olive back and pale base to the lower mandible), and lack of any Brown-crested Flycatcher records from northern Arizona as contributing factors warranting acceptance. Another Great Crested at Portal, COS, 17 Sep 2002 (†RWb) provided only a third accepted record for Arizona. There is one old specimen from the state, collected in the Huachuca Mts., COS, 3 Jun 1901 (Monson and Phillips 1981).

GREAT KISKADEE *Pitangus sulphuratus*. One seen along Sonoita Creek above Patagonia L., SCR, 18 Mar 2000 (†BWo) established only a third accepted record for Arizona.

WHITE-EYED VIREO *Vireo griseus*. Accepted records are of one at Portal, COS, 6–7 May 2000 (BRa, ph. MS), one in Florida Canyon, PIM, 21 Jul–27 Aug 2000 (WL; †MMS), one in northeast Tucson, PIM, 13–14 Apr 2002 (BN, †MMS), one in Flagstaff, COC, 14 May 2003 (†JP), one near Onion Saddle, Chiricahua Mts., COS,

2 Aug 2004 (†KG), and one in E. Whitetail Canyon, Chiricahua Mts., COS, 22 Aug 2004 (†RT). These bring the total number of records accepted from Arizona to 18.

BLACK-CAPPED VIREO *Vireo atricapillus*. A report of this distinctive vireo, based on an individual netted and banded (but not photographed) in Tucson, PIM, 8 Apr 1970 (CC), with the details published in *Western Bird Bander* 46:42, 1971, was evaluated and accepted by the ABC, adding this species to the Arizona list. There still remains no physical documentation for this vireo in Arizona.

YELLOW-THROATED VIREO *Vireo flavifrons*. Three accepted records, one from Madera Canyon, SCR, 21 Aug 1993 († MMe), one from Miller Canyon, COS, 24 Jun–5 Jul 2001 (JHu, SGa, †MMS et al.; s.r. CDB), and one from Sonoita Creek near Patagonia, SCR, 24 Aug 2004 (PG, †DS; ph. GA).

BLUE-HEADED VIREO *Vireo solitarius*. One accepted record of a very bright individual in Sabino Canyon, Tucson, PIM, 23 Oct 2004 (†WR, †MMS, †GHR; ph. GHR). Although the photograph alone was thought by some ABC members to be consistent with the identification but *not* diagnostic, the bird was heard singing in direct comparison with a Cassin's Vireo (*V. cassinii*), and the multiple descriptions submitted were adequate for unanimous acceptance. There were only two previously accepted records from Arizona (Rosenberg and Witzeman 1999), and there remains no definitive physical documentation of this species for the state.

RED-EYED VIREO *Vireo olivaceus*. Six records accepted for this report. One was at the Pinal Air Park pecan grove, PIM, 25 May 2000 (ph. RHo), one was at Ganado L., APA, 26–29 Sep 2002 (†CBa, †MMS), one was at Roger Rd. S.T.P., Tucson, PIM, 9–11 Oct 2002 (†GB, †MMS), one was at Kitt Peak, PIM, 11 Oct 2002 (†RHo), one was at the Boyce Thompson Arboretum, PIN, 1–7 Sep 2003 (†CST; ph. KR), and one was at Dudleyville, PIN, 29 May 2004 (†DJe). Because the frequency of reports in Arizona has declined during the past 20 years, and because of the Red-eyed's similarity to the Yellow-green Vireo (*V. flavoviridis*), the Red-eyed will remain a review species in Arizona.

YELLOW-GREEN VIREO *Vireo flavoviridis*. The only accepted record was of one at Portal, COS, 14 Jul 2001 (†TD, ph. MHa). Of the six Yellow-green Vireos accepted from Arizona, four have been discovered in July, one in late June, and one in May (Rosenberg 2001), a pattern of vagrancy similar that in the Rio Grande valley, Texas, and dissimiliar to that in California, where most of the records are for fall.

CAVE SWALLOW *Petrochelidon fulva*. One well described from Willcox, COS, 20 Oct 2004 (†DS) represents only a fifth accepted record from Arizona and the first since 1991 (Rosenberg and Witzeman 1999).

BLACK-CAPPED CHICKADEE *Poecile atricapillus*. Reports of two individuals at Tsegi Canyon, Navajo N. M., NAV, 25 May 2000 (†RG), one at Colorado City, MOH, 27 Nov 2000 (†TC, †MMS), and two at Teec Nos Pos, APA, 15 Dec 2000–3 Feb 2001 (†TC, CL; ph. MMS, v.t. GHR) were accepted. These bring the total number of records accepted for Arizona to nine, all for the northern portion of the state close to the Utah border.

CAROLINA WREN *Thryothorus ludovicinaus*. One individual frequenting a yard in Tolleson, MAR, 7 Sep–11 Oct 2003 (ph. BGr; see *N. Am. Birds* 58:124) made only a second Arizona record. Arizona's first was of one along the lower San Pedro R. at Cook's Lake Jun 1999–fall 2000 (Rosenberg 2001).

BLACK-CAPPED GNATCATCHER *Polioptila nigriceps*. Accepted records are of two in Leslie Canyon, Chiricahua Mts., COS, 16 Apr 2003+ (v.t. NMC), one along Proctor Rd., Santa Rita Mts., PIM, 9 Aug 2003 (†SF), two in Montosa Canyon, Santa Rita Mts., SCR, 1 Oct–1 Dec 2003+ (†RHo), two at Patagonia L., SCR, 22 Apr 2003–2005 (ph. JZ et al.; ph. RHo, PK, SHe), two at Rock Corral Spring, SCR, 30

Figure 5. This Wood Thrush at the Boyce Thompson Arboretum, Pinal County, 20 October–3 November 2002 provided only the 12th documented record for Arizona.

Photo by Kurt Radamaker

Figure 6. This Mangrove Warbler was netted and photographed at Roosevelt Lake, Gila County, 31 July 2004, providing a first record for Arizona (and the western United States) of this complex of subspecies of the Yellow Warbler.

Photo by Nathan Banfield

Figure 7. Once considered an extreme rarity in Arizona, the Rufous-capped Warbler has now been recorded at least 16 times in the state. This individual was at Portal, Cochise County, 27 April 2004.

Photo by Robert Shantz

Figure 8. This male Flame-colored Tanager was first detected in Madera Canyon in May 2003 and has returned each subsequent spring through 2006. This photo is dated 12 May 2004.

Photo Gary H. Rosenberg

Jan–23 Feb 2004 (†MMS; MK, DS, DP et al.), and two along Sonoita Creek below Patagonia L., SCR, 18 Feb 2004 (†MMS, †DS). Although most of these sightings involved pairs, the only confirmed nesting involved a pair at Patagonia L., SCR, originally found Oct 2002 (MPo; †RHo; ph. DN), which nested successfully there in 2003, 2004, and 2005. Influxes of this species from Mexico have been sporadic, the birds persisting for a few years afterward, but the 2003 incursion appears to be the most widespread and longest lasting yet.

WOOD THRUSH *Hylocichla mustelina*. Two accepted records, of one at Scottsdale, MAR, 28 Nov 2000 (MV; ph. RDi; Figure 5) and one at Boyce Thompson Arboretum, PIN, 20 Oct–3 Nov 2002 (CW; †MMS, ph. KR; see *N. Am. Birds* 57:101). There are about 12 accepted records for Arizona.

AZTEC THRUSH *Ridgwayia pinicola*. The only accepted record was of one at Madera Canyon, SCR, 10–18 Aug 2000 (ph. DS). It is about the 15th accepted for Arizona (not including several published but undocumented reports) and the first report since the invasion of 16+ individuals in southeastern Arizona during August and September 1996 (Rosenberg and Witzeman 1999).

RUFOUS-BACKED ROBIN *Turdus rufopalliatus*. One accepted from Patagonia L. State Park, SCR, 12 Feb 1998 (ph. BZ). The ABC discontinued reviewing reports of this species after 1999.

WHITE WAGTAIL *Motacilla alba*. This previously published Arizona record of a wagtail on the south rim of the Grand Canyon, COC, 6–10 Oct 1985 (Rosenberg and Witzeman 1999:101) was reevaluated to determine whether it was a White (*M. a. ocularis*) or Black-backed Wagtail (*M. a. lugens*), given a recent increase in our understanding of identification of the two forms (Sibley and Howell 1998). Careful studies of the photos of the Grand Canyon bird confirm that it was a White Wagtail. Since this record was evaluated by the committee, the A.O.U. relumped the two forms into a single species, the White Wagtail (Banks et al. 2005).

RED-THROATED PIPIT *Anthus cervinus*. At the request of a committee member, the details of a spring male Red-throated Pipit from the Avra Valley S.T.P., PIM, 2 May 1989 (†JHo) were reevaluated, given that this species had been photographed in Arizona at Kayenta, NAV, 12–17 Oct 1989 (Rosenberg and Witzeman 1999). The ABC agreed unanimously that the details were indeed sufficient to warrant acceptance and noted several features within the description that ruled out an alternate-plumaged American Pipit.

BOHEMIAN WAXWING *Bombycilla garrulus*. A single Bohemian was feeding with a flock of 12 Cedar Waxwings (*B. cedrorum*) in Lutz Canyon, COS, 16 Dec 2004 (†SK), establishing the first accepted report since 1984 (Rosenberg 2001).

TENNESSEE WARBLER *Vermivora peregrina*. One accepted record of one at the Phoenix Zoo, MAR, 5–17 Oct 2002 (†RJ). A decrease in reports in recent years has prompted the ABC to retain this species on its review list.

CRESCENT-CHESTED WARBLER *Parula supercilliosa*. Accepted records are both from Madera Canyon, SCR, of one 24 May–1 Jun 2001 (†MMS, KKr) and another 25–28 Apr 2003 (JK, PK, RWo; †MMS, †GB). These represent only the fourth and fifth records from Arizona.

TROPICAL PARULA *Parula pitiayumi*. Arizona's second Tropical Parula was a singing male at Miller Canyon, COS, 22 Jun–14 Jul 2001 (JBo; †, ph. MMS; v.t. GHR, s.r. CDB). The first was in Madera Canyon, SCR, 14 Jul–13 Sep 1984 (Rosenberg and Witzeman 1999).

MANGROVE YELLOW WARBLER *Dendroica petechia* presumably *rhizophorae*. One of Arizona's more astounding reports in recent times was of a worn adult male

Mangrove Warbler netted in a stand of salt cedar (*Tamarix ramosissima*) and photographed in the hand along the northern edge of Roosevelt L., GIL, 31 Jul 2004 (PN; ph. NBa; see *N. Am. Birds* 58:632; Figure 6). This represents the first record of this form for Arizona as well the western U.S. The closest this form occurs to Arizona is coastal central Sonora, Mexico, where *D. p. rhizophorae* is a summer visitor only (Russell and Monson 1998).

MAGNOLIA WARBLER *Dendroica magnolia*. Seven reports were accepted, of one along Hospital Ridge near Clint's Well, COC, 4 Jun 2000 (†PSw), one in Scottsdale, MAR, 24–25 Oct 2000 (JBa; †MMS, ph. TC), one in Continental, PIM, 15 Feb–16 Apr 2001 (SJ, †MMS), one at the Patagonia Roadside Rest, SCR, 23 May 2002 (JMo; †MMS; v.t. MPo), one at the Phoenix Zoo, MAR, 11 Oct 2002 (†RJ), one at Topock Marsh, MOH, 2 Dec 2002 (†MMS, MPo), and one along Yellow Jacket Creek near Prescott, YAV, 1 Oct 2003 (†WA). These bring the total number of records in the state to about 30.

BLACKBURNIAN WARBLER *Dendroica fusca*. Two accepted records, of one at Cameron, COC, 23–24 Sep 2003 (JC, CL; †MMS) and one at Morgan City Wash, along the Agua Fria River near Lake Pleasant, MAR, 9–11 Oct 2003 (TC, JBa; †RJ). Only about 16 records from Arizona have been accepted by the ABC.

YELLOW-THROATED WARBLER *Dendroica dominica*. Two July records accepted, one from Casa Grande, PIN, 5 Jul 2001 (†NBo), and one from Ramsey Canyon, COS, 3 Jul 2004 (†JMn). These bring the total number of records accepted from the state to 17, with an additional five published reports not reviewed by the ABC (Rosenberg and Witzeman 1999).

PINE WARBLER *Dendroica pinus*. Once considered one of the rarer eastern warblers reaching Arizona, the Pine has become more frequent in recent years. An additional five records were accepted, of one at Bisbee, COS, 5–10 Jan 2000 (WWa, HB; †MMS; ph. MMS), one at the Phoenix Zoo, MAR, 1 Oct 2000 (†, v.t. RJ), one in southwest Phoenix, MAR, 8 Oct 2001 (†CBa), one in Marana, PIM, 8–11 Mar 2002 (†RHo), and one in Tolleson, MAR, 19 Dec 2004 (†, ph. BGr). These bring the total number of records accepted from Arizona to 12, with the first as recent as 1988 (Rosenberg and Witzeman 1999).

PRAIRIE WARBLER *Dendroica discolor*. Like that of the Pine Warbler, the status of the Prairie Warbler in Arizona appears to be changing, with an additional six records accepted, of one in Spencer Canyon, COC, 26 Feb 1998 (†CL), one at Topock, MOH, 27 Nov 1999 (ph. PL), one along the Verde River, Fort McDowell Indian Reservation, MAR, 16 Dec 1999 (†TC), one at St. David, COS, 8 May 2000 (†PW), one at Roper Lake S.P., GRA, 5–13 Jan 2002 (BMe; ph. MMS), and one in Madera Canyon, SCR, 21 May 2003 (†PS). Only three records had been accepted from Arizona previously (Rosenberg and Witzeman 1999, Rosenberg 2001); an additional three published reports have not been reviewed by the ABC (Monson and Phillips 1981).

PALM WARBLER *Dendroica palmarum*. Accepted records are of one at Avra Valley S.T.P., PIM, 23–31 Oct 2002 (MPo; †MMS), one at Sweetwater Wetlands, PIM, 31 Oct 2002 (†DJ), one at Golden Shores, Colorado R., MOH, 2 Dec 2002 (†MMS, MPo), one at Kino Springs, SCR, 12 Dec 2002–21 Mar 2003 (HBe et al.; ph. KKe), one at Prescott, YAV, 4 Oct 2004 (†BP), and one at Portal, COS, 30 Oct 2004 (†NMC). Although there are nearly 50 published reports of this species from Arizona, a recent paucity of sightings has prompted the ABC to return the Palm Warbler to the review list again.

BAY-BREASTED WARBLER *Dendroica castanea*. An old record from Ganado L., APA, 6 Oct 1978 (ph. STe, †GHR), that had not been accepted on the basis of brief written details, was resubmitted along with a photo and subsequently accepted.

Figure 9. Arizona's second Eastern Towhee was in a yard in Flagstaff, Coconino County, 15 December 2002–24 April, 2003.

Photo by John Coons

Figure 10. Arizona's second Le Conte's Sparrow was along the Santa Cruz River, Tucson, Pima County, 19 December, 2004–10 February, 2005.

Photo by David Stejskal

Figure 11. This Nelson's Sharp-tailed Sparrow was at the Avra Valley sewage-treatment plant, Tucson, Pima County, 7–8 October, 2003, representing a first Arizona record.

Photo by Chris D. Benesh

Additional accepted records were of one at Tuba City, COC, 20 Oct 1996 (†CL) and one at Box Bar Recreation Area, Verde R., MAR, 13 Oct 2004 (ph. JBu). Ten Arizona records had been accepted previously.

BLACKPOLL WARBLER *Dendroica striata*. Only two new records accepted by the ABC, one from Page, COC, 8 Sep 2000 (†CL), the other from the Phoenix Zoo, MAR, 27 Sep 2000 (†, v.t. RJ). After a relatively large number of reports in the 1980s and early 1990s, this species has become inexplicably scarce in Arizona in recent years, despite its regularity (though also reduced frequency) in fall along the California coast.

Figure 12. Arizona's second Snow Bunting was at Thatcher, Graham County, 11–20 April 2002.

Photo by Gary H. Rosenberg

CANADA WARBLER *Wilsonia canadensis*. One record accepted, of a spring male at South Fork of Cave Creek Canyon, Chiricahua Mts., COS, 23 May 2004 (†CMa). There are fewer than ten accepted records of this species from Arizona, the last being from 1992 (Rosenberg and Witzeman 1999).

SLATE-THROATED REDSTART *Myioborus miniatus*. A single accepted record of one at Madera Canyon, SCR, 16 May 2003 (†SBa) was only the fifth from Arizona.

RUFOUS-CAPPED WARBLER *Basileuterus rufifrons*. A single Rufous-capped Warbler was located in French Joe Canyon, COS, 1 Nov 1999 (†KKe), relocated there 14 Dec 1999 (†MMS et al.), and subsequently noted there intermittently with a second individual through at least 27 Jun 2004 (ph. MR, ph. GHR, m.ob.). Nesting was confirmed 7 Aug 2001 (†JZi), as well as in 2002 and 2003. Additional accepted records are of one near Old Sawmill Spring, Carr Canyon, COS, 23 Sep 2000 (ph. RHo), one in Garden Canyon, COS, 2 Sep 2002 (†HBe), one in Paradise, COS, 30 Nov 2002 (†JGe), one along South Fork of Cave Creek near Portal, COS, 27 Apr 2004 [DJa; ph. RWb, ph. RSh; see cover *North American Birds* 54 (2); Figure 7], and one in Sycamore Canyon, SCR, 28 July 2004 (ph. DS). The birds in French Joe Canyon may represent a continual presence in that canyon after the original sightings there in 1995 (Rosenberg and Witzeman 1999). These bring the total number of Arizona records accepted by the ABC to about 16.

SCARLET TANAGER *Piranga olivacea*. Accepted records are of one at the Phoenix Zoo, MAR, 4 Oct 2001 (†RJ), an adult male at Patagonia, SCR, 20–23 May 2002 (RBa; †MMS, ph, JMu), one at Parker, LAP, 6 Dec 2003 (†CBa), one at Wenima Wildlife Area near Springerville, APA, 11 May 2004 (†GC), and one in Eagar, APA, 10–11 Sep 2004 (†CBa). There are about 20 accepted records for the state, with an additional eight reports, mostly from the 1970s and 1980s, published in *American Birds* but never reviewed by the ABC (Rosenberg and Witzeman 1999).

FLAME-COLORED TANAGER *Piranga bidentata*. The status of the Flame-colored Tanager in Arizona continues to be complicated by the possibility of hybridization with the Western Tanager (*P. ludoviciana*) (see Rosenberg 2001). Accepted records of Flame-coloreds showing no signs of hybridization are of a male along South Fork of Cave Creek Canyon, COS, 5 May 2001 (†CG), a female in Miller Canyon, COS, 5 May 2001 (†MMS), a male in Miller Canyon, COS, 4 Jul 2001 (†MMS et al.), a singing male there 10–21 Apr+ 2002 (†RHo; †, ph. JPa), a male in Madera Canyon, SCR, 2 May–30 Jul 2003 (†MMS, MZ; ph. RFa, ph. BF; see *N. Am. Birds* 57:431), with a female there 18 May 2003+ (†MMS, SBa; ph. RFr) and likely the same pair there 1 Apr–29 Jun 2004 (BGi, †MMS; ph. MMS, ph. GHR et al.; see *N. Am. Birds* 58:463; Figure 8), with a nest confirmed 10 May 2004 (ph. MMS). Hybrids remain a concern, with at least one photographed in Garden Canyon, COS, 16 May 2000 (ph. BZ; †MMS).

EASTERN TOWHEE *Pipilo erythophthalmus*. A male Eastern Towhee along Sonoita Creek near Patagonia, SCR, 3 Jan–13 Feb 2000+ (JMc, †RHo; ph. MMS, ph. GHR, ph., s.r. RHo) established a first Arizona record. A second was a male in a yard in Flagstaff, COC, 15 Dec 2002–24 Apr 2003 (ph. JC; Figure 9).

BOTTERI'S SPARROW *Aimophila botterii*. Although Botteri's Sparrow is not a review species, the ABC evaluated and accepted a winter report from near Sierra Vista, COS, 2 Jan 2000 (†DK, JR), establishing a first winter record for Arizona.

AMERICAN TREE SPARROW *Spizella arborea*. Accepted records are of one from Wenima Wildlife Area near Springerville, APA, 12 Dec 2002–10 Feb 2003 (DR; †MPo) and one at Sedona, YAV, 21 Dec 2002 (†JPr). This species remains casual in Arizona, with virtually all records from the northern portion of the state.

FIELD SPARROW *Spizella pusilla*. Accepted records are of one well-described

individual at Willow Tank near Portal, COS, 13 Mar 2000 (†RT), one near Sonoita, SCR, 19–20 Mar 2000 (†PMc), and one in Portal, COS, 31 Oct 2004 (v.t. NMC). Only three other records have been accepted from Arizona previously (Rosenberg 2001).

LE CONTE'S SPARROW *Ammodrammus leconteii*. A well-documented individual was along the Santa Cruz River in Marana, PIM, 19 Dec 2004–10 Feb 2005 (†KK, PS; ph. DS, ph. GHR; see *N. Am. Birds* 59:371; Figure 10); the only previous Arizona record was of one at Topock, MOH, 29 Nov 1981 (Rosenberg and Witzeman 1999).

NELSON'S SHARP-TAILED SPARROW *Ammodramus nelsoni*. A stunning Nelson's Sharp-tailed Sparrow was photographed at Avra Valley S.T.P., PIM, 7–8 Oct 2003 (†GB, †, ph. RHo; ph. CDB; Figure 11), documenting a first record for Arizona.

SOOTY FOX SPARROW *Passerella iliaca unalaschensis* group of subspecies. Accepted records are of one in Sahuarita, PIM, 26 Mar 2002 (ph. CCa) and one that wintered at the Boyce Thompson Arboretum, PIN, 26 Oct 2002–Mar 2003 (PMo, CD; ph. GHR). These photos support two of the few substantiated Arizona records of Fox Sparrows originating from the Pacific coast of Alaska or British Columbia. Monson and Phillips (1981) listed only one specimen of this group, of *P. i. townsendi*.

LAPLAND LONGSPUR *Calcarius lapponicus*. Three fall and winter records accepted, one in the San Rafael grasslands, SCR, 20–24 Jan 2000 (†PL; ph. MMS), a group of at least seven in sod fields on the Salt River Indian Reservation near Scottsdale, MAR, 5–9 Mar 2001 (ASp; ph. RJo), and another one at this location 7 Nov 2003 (ph. RJo). There are still fewer than 15 accepted records of this longspur from Arizona.

SNOW BUNTING *Plectophenax nivalis*. Arizona's second Snow Bunting was at the

Figure 13. An invasion of the White-winged Junco in Arizona during the winter of 2000–01 yielded no fewer than four documented in the state. This individual was at Molino Basin, Santa Catalina Mts., Pima County, 11 March, 2001.

Photo by Gary H. Rosenberg

Thatcher S.T.P., GRA, 11–20 Apr 2002 (BMe, JWi, †RHo; ph. GHR; Figure 12). The first was a specimen from Littlefield, MOH, 3 Nov 1981 (Boyce and Elliot 1983).

WHITE-WINGED DARK-EYED JUNCO *Junco hyemalis aikeni*. The winter of 2000–01 winter saw an invasion of the White-winged Junco into Arizona and elsewhere in the West. Accepted records are of one at Mormon Lake, COC, 8–14 Dec 2000 (†CL; ph. RHo), one at Many Farms, APA, 15 Dec 2000 (ph. GHR; †MMS;), one at Tucson, PIM, 19 Dec 2000–5 Mar 2001 (KKr, †, ph. MMS; v.t. GHR), and one at Molino Basin, Santa Catalina Mts., PIM, 8–11 Mar 2001 (†MMS; ph. GHR; see *N. Am. Birds* 55:208; Figure 13). The only other Arizona records appear to be of at least seven collected at Flagstaff and in the White Mts. Nov 1936–Feb 1937 (Phillips et al. 1964) and another specimen from Flagstaff 23 Feb 1971 (Monson and Phillips 1981). Caution should be exercised in identifying this form in Arizona, as a small percentage of Slate-colored Juncos (*J. h. hyemalis* and *J. h. cismontanus*) show white wing-bars.

YELLOW GROSBEAK *Pheucticus chrysopeplus*. Two accepted records, of one in Ash Canyon, COS, 18–28 Jun 2002 (ph. TMu, †JWh) and one at the Arizona–Sonora Desert Museum near Tucson, PIM, 17–21 May 2004 (†LH; ph GHR, MMS; see *N. Am. Birds* 58:463; Figure 14). It should be noted that no Yellow Grosbeak was missing from the aviary at the museum. Twelve records of this Mexican stray have been accepted previously from Arizona (Rosenberg and Witzeman 1999), virtually all of them from either June or July.

Figure 14. This male Yellow Grosbeak at the Arizona-Sonora Desert Museum near Tucson 17–21 May 2004 established a 14th accepted record for Arizona. Virtually all of Arizona's Yellow Grosbeaks have occurred between late May and the end of July.

Photo by Gary Rosenberg

VARIED BUNTING *Passerina versicolor*. Although the Varied Bunting is not a review species in Arizona, an unseasonal report of a male along the San Pedro River near Hereford, COS, 7–21 Mar 2004 (ph. JWo) was evaluated and accepted by the ABC, establishing the species' earliest known spring arrival in the state, or possibly only a second wintering record from Arizona.

RUSTY BLACKBIRD *Euphagus carolinus*. Accepted records are of one in Pasture Canyon near Tuba City, COC, 26 Dec 2002–10 Jan 2003 (CL; ph. MMS) and one at Ganado Lake, APA, 22 Jan 2003 (†PL). Only about ten records have been accepted previously from Arizona, all except one before 1990 (Rosenberg and Witzeman 1999).

COMMON GRACKLE *Quiscalus quiscula*. Single individuals were at Apache Lake Marina Resort, MAR, 27 Feb–18 Mar 2001 (†, ph. RJo; ph. MMS), near Jake's Corner, GIL, 2 Nov 2002 (ph. KR), in Flagstaff, COC, 9 Sep 2004 (ph. JC), and in Eagar, APA, 15 Oct 2004 (ph. DR). These bring the total number of records accepted by the ABC to 12.

ORCHARD ORIOLE *Icterus spurius*. Accepted records are of one coming to a feeder in Tucson, PIM, 7–8 Jan 1997 (EGo; ph. MMS), one along the Santa Cruz R. near Marana, PIM, 9–15 Feb 2003 (KKe, ph. RHo), and one in Tucson, PIM, 4–27 Mar 2004 (JO; †MMS, ph. GB) that returned 10 Apr 2005 (JO; †MMS). All of the accepted records of this species in Arizona in the past ten years have been for winter.

BALTIMORE ORIOLE *Icterus galbula*. One male in northeast Tucson, PIM, 8 May 2002 (†MMS), another male at Hunt, APA, 8–10 May (†, ph. JV), and yet another adult male in Cave Creek Canyon, COS, 15–17 May 2002 (†SHn; v.t. SM!) were the only reports of this species received.

BLACK ROSY-FINCH *Leucosticte atrata*. A belated report of six at Sunset Crater N.M. near Flagstaff, COC, 6 Dec 1996 (†GHR) coincided with a flock along the Echo Cliffs south of Page, COC, during the winter of 1996–97. Amazingly, a flock of up to 65 was at the same site along the Echo Cliffs, 26 Nov 2000–3 Feb 2001 (†, ph. MMS, †, ph. TC, CL, ph. RHo).

PURPLE FINCH *Carpodacus purpureus*. One accepted report of a pair coming to a feeder in Patagonia, SCR, 15–21 Mar 2003 (†SA; ph. DS). The ABC has reinstated this species, at best casual in Arizona and seldom reported, on its review list.

REPORTS NOT ACCEPTED

TUFTED DUCK *Aythya fuligula*. The report of a female at the Sedona S.T.P., YAV, 21 Dec 2002 was not accepted because of the lack of a documenting photo and because other observers felt the bird in question was a Greater Scaup (*A. marila*), explaining a lack of any visible tuft. There is only one accepted Arizona record of the Tufted Duck.

BLACK VULTURE *Coragyps atratus*. The description of one at Clarkdale, YAV, 5 Sep 1998 lacked detail sufficient to rule out the more expected immature Turkey Vulture (*Cathartes aura*). The Black Vulture is unexpected anywhere in Arizona north of the Phoenix area.

MISSISSIPPI KITE *Ictinia mississippiensis*. The report of one out of range from Prescott, YAV, 20 Jun 1999 indicated that the bird was seen only briefly (5–8 seconds) and lacked detail sufficient to eliminate similar species.

RED-SHOULDERED HAWK *Buteo lineatus*. Records submitted but not accepted were of one at Cottonwood, YAV, 31 Dec 1985, one at the mouth of Quartermaster

Canyon, Colorado R., COC, 27 Feb 1998, and one in Pasture Canyon, COC, 3 Oct 2000. Although the ABC considered each of these reports likely correct, giving them six positive votes in the second round of voting, at least two committee members concluded that the descriptions were too brief for acceptance.

BROAD-WINGED HAWK *Buteo platypterus*. A report from Barfoot Lookout Trail, Chiricahua Mts., COS, 6 Aug 1995, was erroneously reported as accepted by Rosenberg and Witzeman (1998). Other reports, one from Skull Valley near Prescott, YAV, 10 Mar 2002, not accepted on a second round, and one from the Pinal Air Park pecan grove, PIM, 24 Apr 2004, both lacked detail sufficient to eliminate similar species.

SHORT-TAILED HAWK *Buteo brachyurus*. An old report of one from near Paradise, COS, 7 Mar 1990 was reviewed again, given the recent acceptance of this species onto the state list, but it was ultimately not accepted on a second round because of the lack of enough convincing details. Other more recent reports not accepted are of five at one time in the Santa Rita Mountains, SCR, 25 Aug 2002 and one in Carr Canyon, COS, 26 Jun 2004.

LAUGHING GULL *Larus atricilla*. A description of one at Willow Lake, YAV, 11 June 1999 lacked detail sufficient to eliminate similar species.

ARCTIC TERN *Sterna paradisaea*. The written description of an immature at Ashurst Lake near Flagstaff, COC, 26 Sept 2004 was ultimately not accepted after two rounds. The observer himself was hesitant in reporting this single-observer sight record without physical documentation. Given the difficulty in distinguishing this species from the more regular Common Tern (*S. hirundo*), the ABC is also cautious accepting a sight report without photos.

ELEGANT TERN *Thalasseus elegans*. The description of one at Reid Park Tucson, PIM, 11 Jun 2000 was not detailed enough to confirm the identification.

BLACK SKIMMER *Rynchops niger*. A report of one in Green Valley, PIM, 19 Apr 2004 lacked details sufficient for acceptance.

BLACK SWIFT *Cypseloides niger*. A report of three at Montezuma Pass, Huachuca Mts., COS, 26 May 2003 went to a second round but was eventually not accepted because members were concerned with the lack of direct comparison with other swift species. There still remains no physically documented record of the Black Swift from Arizona.

LUCIFER HUMMINGBIRD *Calothorax lucifer*. One reported from a high elevation in Pinery Canyon, Chiricahua Mts., COS, 25 Jun 2004 was believed by the ABC to be in inappropriate habitat, and the described red feathers on throat suggested the Broad-tailed Hummingbird (*Selasphorus platycercus*), which occurs regularly at this location.

RED-BREASTED SAPSUCKER *Sphyrapicus ruber*. An individual photographed at Patagonia Lake, SCR, 5 Dec 2004 was considered to be an intergrade between the Red-breasted and Red-naped Sapsuckers.

YELLOW-BELLIED SAPSUCKER *Sphyrapicus varius*. Details of one reported along the San Pedro River near Hereford, COS, 2 Apr 1998 did not completely rule out the more expected Red-naped Sapsucker.

AMERICAN THREE-TOED WOODPECKER *Picoides dorsalis*. Two reports, one from Manning Camp, Saguaro National Park, PIM, 8 May 1996 and one from Rose Canyon, Santa Catalina Mts., PIM, 7 Aug 2000, were both thought likely to have been based on juvenile Hairy Woodpeckers (*P. villosus*) showing some yellow on the head. There are no confirmed records of the American Three-toed Woodpecker from southern Arizona.

ALDER FLYCATCHER *Empidonax alnorum*. An intriguing report of one at Cameron, COC, 26 Aug 2002 was not accepted because no physical documentation (sound recording or photograph) accompanied the sighting. Because of this species' extreme similarity in plumage to the eastern subspecies of the Willow Flycatcher (*E. t. traillii*) and a well-established variation in the Willow's call notes, the ABC is conservative in accepting a single-observer sight report of the Alder as a first Arizona record.

LEAST FLYCATCHER *Empidonax minimus*. Owing to the difficulty in distinguishing this species from the Dusky Flycatcher (*E. oberholseri*) and the plumage variation, in general, of all *Empidonax* species, the ABC remains very conservative with regard to sight records of the Least Flycatcher. Reports of this species that many committee members commented "may have been correct," but lacked sufficient critical details (such as description of diagnostic calls) that eliminated similar species, were of one at Many Farms, APA, 4 Sep 1999, one in the Tucson Mts., PIM, 14 May 2002, and one at Tuba City, COC, 2 Sep 2003.

NUTTING'S FLYCATCHER *Myiarchus nuttingi*. Although the record was never formally submitted to the ABC for review, the committee evaluated a published report of this Mexican species based on a bird netted and photographed at the Audubon Research Ranch southeast of Elgin, SCR, 15 Jul 1985 (Bowers and Dunning 1987). It was the unanimous opinion of the ABC that the individual photographed was, in fact, an Ash-throated Flycatcher (*M. cinerascens*) in *very* worn plumage. Aspects of the rectrix pattern (as shown in the published photographs) confirm this identification. Erroneous conclusions based on characters presented in the article as diagnostic for Nutting's, such as an "orange" mouth lining, and, less importantly, various plumage characteristics, were likely misinterpretations of discolored photos and misinterpretations of important distinguishing characters presented by Lanyon (1961). Another report of Nutting's from Patagonia L., SCR, 29 Dec 2002 was perhaps correct, but confusing aspects of the description, the lack of photographs or sound recordings, and the subsequent presence there of both Ash-throated and Dusky-capped (*M. tuberculifer*) flycatchers led to the ABC's reluctance to accept this report. Extreme caution should be used in the identification of Nutting's Flycatcher wherever the Ash-throated is possible (throughout Arizona). Recordings of vocalizations will play an essential role in the evaluation of any future report. See San Miguel and McGrath (2005) for interesting discussion of a recent California report of Nutting's Flycatcher.

YELLOW-BILLED MAGPIE *Pica nuttalli*. Most of the ABC agreed that the report of this sedentary California endemic from Prescott, YAV, 3 Apr 2004 was based on a correct identification, but virtually all of the committee members had trouble believing that the bird was a natural vagrant and had not been in captivity.

SINALOA MARTIN *Progne sinaloae*. An intriguing written report of this Mexican species from Barfoot Jct., Chiricahua Mts., COS, 5 Sep 1998 was not documented adequately to warrant acceptance as a first U.S. record. Little is known about the migration schedule, route, and winter distribution of this species (Howell and Webb 1995), yet it has been recorded within 100 miles of the U.S. border in Sonora (Russell and Monson 1998, A. M. Craig pers. comm.), and future vagrants to southeastern Arizona would not be altogether unexpected.

SEDGE WREN *Cistothorus platensis*. Despite garnering six positive votes on the second round, a report along with a drawing of this species from Whitewater Draw Wildlife Area, COS, 26 Aug 2001 ultimately was not accepted as a first state record, one committee member citing concern over the observer's possible lack of familiarity with western subspecies of the Marsh Wren.

BLACK-CAPPED GNATCATCHER *Polioptila nigriceps*. A male gnatcatcher photographed in Chino Canyon, SCR, 7 Apr–21 Jul 1996, originally accepted

as a male Black-capped (see Rosenberg and Witzeman 1999), returned in 1997, when close-up photographs revealed it to be a hybrid Black-capped × Black-tailed Gnatcatcher; bill length, amount of white in the tail, and vocalizations all appeared intermediate between the two species.

NORTHERN WHEATEAR *Oenanthe oenanthe*. The ABC was divided 4–4 after two rounds for a Northern Wheatear reported from Green Valley, PIM, 19 Oct 2002. Although some members noted that several characteristics favored the identification as a Northern Wheatear (dark mask, buff on breast, etc.), others considered the description too incomplete to be accepted as a second Arizona record without photographic evidence.

VEERY *Catharus fuscescens*. At the request of a committee member, the ABC reevaluated an old accepted report of the Veery (Rosenberg and Witzeman 1999) from Patagonia, SCR, 25 May 1976. The documentation was found lacking detail sufficient for acceptance. There remains only one accepted record away from the White Mts. (where this species historically summered), of a bird photographed at the Boyce Thompson Arboretum 4 Jul–25 Aug 1992 (Rosenberg and Witzeman 1999).

AZTEC THRUSH *Ridgwayia pinicola*. The description of a juvenile reported from Geology Vista, Santa Catalina Mts., PIM, 25 Aug 2000 lacked detail sufficient for acceptance. Several committee members mentioned that a juvenile Aztec Thrush is more "scalloped," not "streaked," as this bird was described. Although the first documented U.S. record of the Aztec Thrush (from Texas) was of a juvenile (Wolf 1978), none of the Arizona records pertain to that plumage.

BROWN-BACKED SOLITAIRE *Myadestes occidentalis*. An unequivocal Brown-backed Solitaire was photographed in lower Madera Canyon, PIM, 4 Oct 1996 (NC; ph. GHR, ph. CDB). The ABC was nearly unanimous in suggesting that this species not be accepted onto the Arizona (and U.S.) list because of the uncertainty about this individual's origin. Because of its amazing song, the Brown-backed Solitaire is one of the most common cage birds seen in Mexican towns. If the species ever establishes a pattern of vagrancy Arizona, this report will be reevaluated.

SPRAGUE'S PIPIT *Anthus spragueii*. An out-of-season individual reported on a dirt road near Elgin in the Sonoita grasslands, SCR, 1 June 2003 was thought by several members to have likely been a juvenile Horned Lark (*Eremophila alpestris*), consideration of which was not mentioned in the description.

BREWSTER'S WARBLER *Vermivora pinus* × *chrysoptera*. An intriguing report of this hybrid combination, which would have represented a first from Arizona, from Portal, COS, 21 May 1998, unfortunately lacked enough detail for the committee to accept it.

BLACKBURNIAN WARBLER *Dendroica fusca*. An old report consisting of only partial details of one at South Fork near Springerville, APA, 5 Oct 1978 was considered by most on the committee to be likely correct but not detailed enough for acceptance.

SWAINSON'S WARBLER *Limnothlypis swainsonii*. A report of one from Tolleson, MAR, 25 Aug 2002 was considered likely correct by several committee members, but all felt the description was missing elements critical to substantiating the sighting as a second Arizona record.

SCARLET TANAGER *Piranga olivacea*. One reported from Round Valley, north of Portal, COS, 24 Oct 2002 was not accepted. Although the observer was very experienced, the details submitted were too brief to substantiate the sighting.

FLAME-COLORED TANAGER *Piranga bidentata*. A second-year male was reported from Miller Canyon, COS, 10 Jun 2002, but the description did not rule

out the possibility of a hybrid with the Western Tanager. This sighting was made while an adult male Flame-colored Tanger as well as several apparent hybrids were in the canyon.

FIVE-STRIPED SPARROW *Aimophila quinquestriata*. A winter extralimital report from Catalina State Park north of Tucson, PIM, 16 Dec 1999 was considered not detailed enough for acceptance of what would represent the northernmost occurrence of this species.

TIMBERLINE BREWER'S SPARROW *Spizella breweri taverneri*. A bird thought to be of this form was well described from Hereford, COS, 22 Jan 2000. The committee was nearly unanimous in its decision not to accept this report without physical documentation and to revisit this submission at a later date if definitive field characters distinguishing this form from the nominate subspecies of Brewer's Sparrow. Monson and Phillips (1981) mentioned two specimens from Arizona that *may* be *taverneri*.

YELLOW GROSBEAK *Pheucticus chrysopeplus*. The report of one seen only briefly (4 seconds) in Sabino Canyon, PIM, 9 May 2001 was not detailed enough for acceptance.

TRICOLORED BLACKBIRD *Agelaius tricolor*. A bird photographed in Tucson, PIM, 20 Jul 2002, showing what appeared to be "white" tips to the epaulet, likely a bleached Red-winged Blackbird, showing a condition common in the Red-winged in midsummer. The photograph was, unfortunately, of poor quality, and committee members disagreed as to the true shape of the bill. There remain no Arizona records of this California specialty.

BLACK-BACKED BULLOCK'S ORIOLE *Icterus bullocki abeillei*. A written report of an adult male at Nogales, SCR, 13–19 Jun 2002 was not detailed enough to rule out a potential hybrid, aberrant individual, or escaped cage bird.

BALTIMORE ORIOLE *Icterus galbula*. Photos of a female coming to a feeder in Portal, COS, 16 May 1997 did not definitively rule out a possible hybrid Baltimore × Bullock's Oriole.

CONTRIBUTORS

Walt Anderson, George Armistead, John Arvin, Scott Atkinson, Charles Babbitt (CBa), John Bache-Wiig (JBw), Mary Jo Ballator, Nathan Banfield (NBa), Steve Barlow (SBa), Jack Bartley (JBa), Robin Baxter (RBa), Tom Beatty, Chris D. Benesh, Harry Bergtholdt (HBe), Gavin Bieber, Susan Birky, Jerry Bock (JBo), Rick Bowers (RBo), Ned Boyajian (NBo), Ed Boyd, Hank Brodkin, Jim Burns (JBu), R. G. Burton (RBu), Dave Cagle (DCa), Eleanor Campbell, David Carlstrom (DCs), Cliff Cathers (CCa), Robert Chapman, Glen Coady (GCo), Jeff Coker (JCk), John Coons, Doug Cooper (DCo), Charles Corchran, Troy Corman, Gary Crandall, Marion Cressman, Marcy Dalmer, Robert Darby, Stephen Davies, Tyler Davis, Henry Detwiler, Pierre Deviche, Rich Ditch (RDi), Cynthia Donald, Jon L. Dunn, Tina Eggert, Joel Ellis (JEl), Jeff Estis (JEs), Shawneen Finnegan, Bob Fogg, Richard Fray (RFa), Reid Freeman, Kurt Fultz, Frank Gallo, Steve Ganley (SGa), Murray Gardler, Kurt Gaskill, Joseph Gebler (JGe), Brian Gibbons (BGi), Tony Godfrey, Elaine Goldman, Shawn Goodchild (SGo), John Grahame (JGr), Dan Green, Phil Gregory, Chet Gresham, Robert Grimmond, Bill Grossi (BGr), Jennifer Hanley (JHy), Linda Harris, Ned Harris, Michael Harvey (MHa), Karen Havlena, Jim Havlena (JHv), James Haw (JHw), James Hays (JHa), Stuart Healy (SHe), Steve Heinl (SHn), Robert Henry (RHe), George Hentz, John Hildebrand (JHi), Jack Holloway (JHo), Rich Hoyer (RHo), J. Hudson (JHu), Matt Hysell (MHy), Marshall J. Iliff, Dave Jasper (DJa), Doug Jenness (DJe), Sally Johnsen, Bud Johnson, Roy Jones, Keith

Kamper (KKa), Patrick Kearney (PKe), Melody Kehl, Jo Ann Kelly, Phil Kelly, Scott Kennedy, Ken Kertell (KKe), Kendall Kroeson (KKr), Dave Krueper, Brynne Langan, Mike Lanzone, Chuck LaRue, Paul Lehman, Wade Leitner, Dean and Joan Leuhrs, John Levy, Larry Liese, Craig Marken (CMa), Janine McCabe (JMc), Paul McConnell (PMc), Chet McGaugh (CMg), Carol McIntyre (CMi), Charles Melton (CMe), M. Mencotti (MMe), Bill Metheny (BMe), Scott Mills (SMi), Steve Mlodinow (SMo), Janet Moore (JMo), T. Moore (TMo), Narca Moore-Craig, Arnold Moorhouse, Terry Morgan (TMg), Joseph Morlan (JMn), Elaine Morral, David Morrison, Bob Morse (BMo), Pete Moulton (PMo), Ted Mouras (TMu), John Munier, Jr. (JMu), Dave Nelson, Kristi Nelson, Patti Newell, Brian Nicholas, Jeryl Ogden, Jim Parker (JPa), Walter Paton, Bob Pearson, Dave Pearson, Mark Peterson (MPe), Anne Peyton, M. Plotkin (MPl), Molly Pollock (MPo), Bonnie Pranter, John Prather, Mark Pretti (MPr), Dave Quady, Kurt Radamaker, Roger Radd (RRa), Brian Rapoza (BRa), Betty Rathjen, Mike Rogers, Rick Romea (RRo), Gary H. Rosenberg, Donna Roten, C. Rudd, Will Russell, Janet Ruth, Robert Scholes (RSc), Bill Sparks (BSp), Connie Sparks, John Saba (JSa), Peter Salomon, Bob Schutsky (BSh), Bill Scott (BSc), Robert Shantz (RSh), David A. Sibley, D. Small, James Smith (JSm), Troy Smith, Michael Solot, Bob Spalin (BSa), Cindy Sprecher (CSr), Dave Stejskal, Mark M. Stevenson, Joshua Stewart (JSt), Doug Stotz (DSt), Brian Sullivan (BSu), Paul Sweet (PSw), David Taylor, J. Taylor, Rick Taylor, Scott Terrill (STe), Bob Thomen, Carl Tomoff, Walter Tordoff, Mark Turner, Sandy Turner (STu), Andrew Vallely, Christie Van Cleve, Marceline Van DeWater, David Vander Pluym, Jimmy Videle, J. Wallick (JWa), Wezil Walraven , Peggy Wang, Richard Webster (RWb), Ralph Welter (RWe), David West, George West, Jack Whetstone (JWh), David Whiteley, John Williams (JWi), Sheri Williamson, Erika Wilson, Barb & Lou Winterfield, Cathy Wise, Robin Wolcott (RWo), Tom Wood, Joe Woodley (JWo), Brian Wooldridge (BWo), James Zabriskie, Barry Zimmer, James Zimmer (JZi), Kevin Zimmer, Mark Zloba.

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BREEDING AVIFAUNAL CHANGES IN THE SAN FRANCISCO BAY AREA 1927–2005

WILLIAM G. BOUSMAN, 321 Arlington Way, Menlo Park, California 94025; barlowi@earthlink.net

ABSTRACT: I compare the breeding avifauna of the San Francisco Bay area prior to 1927 with the current breeding avifauna. There were 172 breeding species known in the San Francisco Bay area prior to 1927, whereas today there are 215. Four species have been extirpated, whereas 47 are new. Most of the species added to the breeding avifauna are casual, irregular, or accidental, but 17 of these now breed regularly. The reasons for these avifaunal changes are diverse but in many cases are related to range expansions or contractions. Factors contributing to expansions include rebound of populations following cessation of commercial harvesting, conversion of salt marshes to salt-evaporation ponds, maturation of second-growth forests, urban adaptation, exploitation of artificial reservoirs, and habitat protection.

Grinnell and Wythe (1927) summarized the status of birds of the nine counties bordering on San Francisco and San Pablo bays, California, one of the major historical benchmarks in the description of western North America's avifauna. In the 80 years since 1927, the San Francisco Bay region has undergone vast changes, and its avifauna has changed in proportion. Thus a comparison of current conditions with those reported by Grinnell and Wythe is of value.

METHODS

I made a determination of the breeding status of the species listed in Grinnell and Wythe (1927) for each of the nine counties contiguous to the San Francisco Bay estuary (Figure 1), the region referred to subsequently as the "Bay area." In those cases where Grinnell and Wythe listed specific breeding evidence I accepted this evidence if it was equivalent to confirmed breeding according to the definitions of the North American Ornithological Atlas Committee's protocols for breeding bird atlases (http:/americanbirding.org/norac), that is, nest with young, dependent fledglings, etc. In cases where a species was described as a "resident" or "summer visitant" I accepted these records as being equivalent to confirmed breeding even though no evidence was given. However, when a bird was described as being present in the summer or at other times in the year, but no other evidence was provided, I treated these records as probable or possible breeding. To this list of confirmed species I added the Rock Pigeon (*Columba livia*), which was not treated by Grinnell and Wythe.

After making an initial determination of the current status of all species breeding in the San Francisco Bay area (see below), I established a draft list of those species whose status had changed, that is, species that had either been extirpated from or added to the breeding avifauna. For extirpated species I obtained the latest documentation of breeding, while for newly breeding species I recorded the documentation of first breeding. For documentation, I used published sources such as the seasonal reports for the Middle Pacific

Figure 1. San Francisco Bay area counties. Numbers correspond to the ordering of symbols coding for the distribution of species listed in tables 2 and 3.

Coast region (now called the Northern California region) contained in *North American Birds* and its predecessor publications, as well as the *Condor*, *Bird-Lore*, and the *Gull*. I also obtained a number of unpublished records from regional experts, and the observers responsible for these records are listed in the acknowledgments. I searched the egg collections of the California Academy of Sciences (CAS), the Museum of Vertebrate Zoology (MVZ), the Western Foundation of Vertebrate Zoology (WFVZ), the San Bernardino County Museum (SBCM), and the National Museum of Natural History, Smithsonian Institution (USNM) for egg records for species on my draft list. Although the focus of this paper is on the San Francisco Bay area, I have also examined breeding records from surrounding areas where these provide context for breeding expansions or contractions.

I determined the status of species currently breeding in the San Francisco Bay area from published information in the Marin, Sonoma, San Mateo, and Napa county breeding bird atlases (Shuford 1993, Burridge 1995, Sequoia Audubon Society 2001, Berner et al. 2003), as well as from unpublished information from ongoing atlas work in the other five counties. I prepared a draft list of currently breeding species, and I obtained detailed comments on these records from regional experts (see acknowledgments). The records in this paper for the nine counties are current through the 2005 breeding season.

To aid in assessing avifaunal changes from the pre-1927 period to the present, I assigned new breeding species to four categories: (1) regular breeder, (2) irregular or very rare breeder, (3) previously established (pre-1927) breeder, and (4) introduced breeder. I defined category 1 (regular breeders) as those species that are now breeding in one or more counties on an annual basis. I defined category 2 (irregular or very rare breeders) as those species that breed sporadically. To distinguish between category 1 and category 2 species, I plotted all documented breeding records on a map of California to determine whether the recent history of breeding records suggests a range expansion, hence category 1, or if the breeding was sporadic in space and time, hence category 2. I identified category 3 species as those rare or secretive species that were likely overlooked before 1927 but were probably present in small numbers. Introduced breeders (category 4) are generally well documented in the published literature and readily identified.

RESULTS

On the basis of the species accounts in Grinnell and Wythe, with the Rock Pigeon added, there were 160 species breeding in the nine-county San Francisco Bay area from the time of the earliest naturalists' visits (Alexander Collie and Paolo Emilio Botta in 1826 and 1827; Palmer 1917) up to 1927. Seven more species were listed as occurring during the breeding season but without evidence of confirmed breeding: the Spotted Owl (*Strix occidentalis*), Pileated Woodpecker (*Dryocopus pilieatus*), Purple Martin (*Progne subis*), Violet-green Swallow (*Tachycineta thalassina*), Red-breasted Nuthatch (*Sitta canadensis*), Yellow-rumped Warbler (*Dendroica coronata*), and Black-throated Gray Warbler (*D. nigrescens*). In Appendix 1 I list additional pre-1927 breeding records for the Bay area not mentioned by Grinnell and Wythe. For four of these additional species, the Purple Martin, Violet-green Swallow, Yellow-rumped Warbler, and Black-throated Gray Warbler, I found confirmed breeding evidence for species considered only probable or possible on the basis of Grinnell and Wythe's list, bringing the 1927 total to 164 species. In addition, there are another eight species that Grinnell and Wythe did not list as possible breeders for which I located breeding evidence earlier than 1927: the Eared Grebe (*Podiceps nigricollis*), Clark's Grebe (*Aechmophorus clarkii*), Great Egret (*Ardea alba*), Canada Goose (*Branta canadensis*), Black Rail (*Laterallus jamaicensis*), American Avocet (*Recurvirostra americana*), Lesser Nighthawk (*Chordeiles acutipennis*), and Black-chinned Hummingbird (*Archilochus alexandri*). With these additions the pre-1927 total of breeding birds increases to 172 species.

The number of breeding species in the nine San Francisco Bay area counties for the period up to 1927 is compared in Table 1 with the number of species that are known to have bred in these counties from 1928 to 2005. Whereas the total number of breeding species for the entire region in 1927 was 172, 215 species have been recorded breeding in the period following, for a 25% increase.

Four species breeding in the San Francisco Bay area prior to 1927 are no longer present as breeding species. These are listed in Table 2 and discussed below in the species accounts. In contrast, 47 species have been added to the list of breeding avifauna since 1927. These species are listed in Table 3 and also discussed in the species accounts.

SPECIES ACCOUNTS

These accounts provide a general overview of species that have been extirpated since 1927 or are new breeders. Specific records that document breeding changes are placed at the end of each account. These records sometimes refer to breeding evidence that is typically used in breeding bird atlases, such as, "on nest," "fledged young," "precocial young," and so forth. Abbreviations: AB, *American Birds*; AFN, *Audubon Field Notes*; NAB, *North American Birds*; NASFN, *National Audubon Society Field Notes*.

Extirpated Species

Grinnell and Wythe (1927) believed that by the time of their publication three species had already been extirpated from the Bay area counties: the California Condor (*Gymnogyps californianus*), Wood Duck (*Aix sponsa*), and Bald Eagle (*Haliaeetus leucocephalus*). There were few breeding records for the California Condor ever in the Bay area and none since 1869 (Grinnell and Miller 1944, Berner et al. 2003). The Wood Duck, however, has reestablished itself throughout the region, and Bald Eagles are now nest-

Table 1 Number of Breeding Species in San Francisco Bay Area by County, 1826–1927 versus 1928–2005

	Breeding Species		
County	1826–1927	1928–2005	Increase
Sonoma	118	164	39%
Marin	109	165	51%
San Francisco	87	104	20%
San Mateo	105	167	59%
Santa Clara	121	178	47%
Alameda	122	174	43%
Contra Costa	83	159	92%
Solano	70	137	96%
Napa	75	158	111%
Total Bay area	172	215	25%

Table 2 Species No Longer Breeding in the San Francisco Bay Area

Species	Status by County[a]
Fulvous Whistling-Duck	000++0000
Yellow-billed Cuckoo	+000+000+
Lesser Nighthawk	0000+0000
Willow Flycatcher	000+++000

[a]Codes ordered by county as numbered in Figure 1. 0, species is unrecorded breeding in the county; +, species recorded as breeding in the county prior to 1927.

ing at reservoirs in three counties. Since 1927 four further species have been extirpated, as listed in Table 2 and discussed below. The accounts place these species' disappearance in the context of distributional changes in California or the western United States. The records listed at the end of the account are, in chronological order, the last known breeding records.

Fulvous Whistling-Duck (*Dendrocygna bicolor*). The Fulvous Whistling-Duck appears to have been a fairly common breeding species in the San Joaquin and southern Sacramento valleys at the end of the 19th century (Grinnell 1902). Many egg sets were collected from the Central Valley during the first third of the 20th century, especially in Merced County and the counties to the south (WFVZ, CAS, MVZ). But there is no evidence that this duck occurred regularly in the Bay area at this time, and the two records listed below are the only known instances of breeding. The last egg set from Merced County was collected in 1937 (WFVZ 37781a). Adults with six unfledged young observed on 5 Oct 1947 on Tulare Lake, Kings County (AFN 1:18, 1948), made the last breeding record from the San Joaquin Valley. Farther south, nesting occurred on the coastal slope of southern California at Playa del Rey, Los Angeles County into the early 1950s (Garrett and Dunn 1981). The Fulvous Whistling-Duck nested at the southern end of the Salton Sea until the late 1990s but may now be extirpated as a breeding species from California (Patten et al. 2003). Records: Downy young captured in a marsh at Mountain View, Santa Clara County, summer 1917 (Snyder 1919). Downy young found near Redwood City, San Mateo County, prior to 1927 (Grinnell and Wythe 1927).

Yellow-billed Cuckoo (*Coccyzus americanus*). The Yellow-billed Cuckoo was considered rare in the Bay area at the beginning of the 20th century (Grinnell and Wythe 1927). At the start of the 20th century cuckoos generally nested in willow thickets along streams, sometimes in a mixture with other riparian trees and shrubs. In the Bay area willows historically grew along narrow riparian corridors or in thickets ("sausals") as a component of freshwater swamps. In Santa Clara County, drainage for agriculture and flood control eliminated most of this habitat by the end of the 19th century (Cooper 1926). The cuckoo's range contracted throughout the West, the species being extirpated from British Columbia by the 1920s, Washington by 1934, and Oregon by 1945 (Hughes 1999). To a substantial degree this range reduction has been caused by conversion of riparian habitats for agriculture, flood control, or urbanization (Laymon and Halterman 1987). Yet even apparently suitable habitats that appear unchanged in recent decades no longer have breeding cuckoos, and the reasons for this are not clear (Laymon and Halterman 1987). By the early 1990s the Yellow-billed Cuckoo bred in California only along the South Fork of the Kern River,

Table 3 Species Breeding in the San Francisco Bay Area Not Recorded by Grinnell and Wythe (1927)

Species	Category of Breeding	Status by County[a]
Mute Swan	Introduced	++0000+00
Gadwall	Regular	+++++++++
American Wigeon	Casual/sporadic	000+0+000
Blue-winged Teal	Casual/sporadic	0+00+++00
Canvasback	Casual/sporadic	0000+0000
Ring-necked Duck	Casual/sporadic	0000+0000
Hooded Merganser	Casual/sporadic	+00000000
Common Merganser	Regular	++0+++00+
Wild Turkey	Introduced	+00++++++
Least Bittern	Casual/sporadic	0+0000000
Snowy Egret	Regular	++0++++++
Little Blue Heron	Casual/sporadic	0000+0000
Cattle Egret	Casual/sporadic	+000++000
White-faced Ibis	Casual/sporadic	0000+0000
Wilson's Phalarope	Casual/sporadic	+000000+0
Heermann's Gull	Casual/sporadic	00++00000
California Gull	Regular	00+0+++00
Arctic Tern	Casual/sporadic	00000+000
Forster's Tern	Regular	0+0+++0++
Least Tern	Regular	000+0++00
Black Skimmer	Regular	000+++000
Marbled Murrelet	Likely <1927 but undetected	000+00000
Spotted Owl	Likely <1927 but undetected	++000000+
N. Saw-whet Owl	Likely <1927 but undetected	++0+++00+
Black Swift	Likely <1927 but undetected	000+00000
Costa's Hummingbird	Casual/sporadic	0000++000
Red-breasted Sapsucker	Regular	++0+000+0
Pileated Woodpecker	Regular	++0++000+
Cassin's Kingbird	Casual/sporadic	0+00++0+0
Bell's Vireo	Casual/sporadic	0000++000
Gray Jay	Casual/sporadic	+00000000
Red-breasted Nuthatch	Regular	++++++00+
Varied Thrush	Regular	000+00000
Northern Mockingbird	Regular	+++++++++
European Starling	Regular	+++++++++
Cedar Waxwing	Casual/sporadic	000++++0+
Nashville Warbler	Casual/sporadic	+00000000
Northern Parula	Casual/sporadic	0+0+00000
Hermit Warbler	Likely <1927 but undetected	++0++000+
American Redstart	Casual/sporadic	0+0+00000
Hooded Warbler	Casual/sporadic	000+00000
Rose-breasted Grosbeak	Casual/sporadic	000+00+00
Blue Grosbeak	Regular	+000++0+0
Indigo Bunting	Casual/sporadic	0+0++++00
Great-tailed Grackle	Regular	+0+0++++0
Hooded Oriole	Regular	+++++++++
Red Crossbill	Regular	0+++00000

[a]Codes ordered by county as numbered in Figure 1. 0, species unrecorded breeding in the county; +, species recorded as breeding in the county since 1927.

the Sacramento River, the Colorado River, and the Santa Ana River (Small 1994). Records: Specimen and nest collected, Palo Alto, Santa Clara County, 22 Jul 1901 (see CAS 14306). On nest, Wilson Ranch, Napa County, 1902 (E. L. Bickford notes *fide* W. T. Grummer). Four eggs collected, Santa Rosa Valley, Sonoma County, 24 Jun 1923 (WFVZ 102477).

Lesser Nighthawk (*Chordeiles acutipennis*). The Lesser Nighthawk is a species of the Lower Sonoran life zone. It was abundant in the San Joaquin Valley at the end of the 19th century, with birds also found in valleys in the coast ranges as far north as San Benito County (Grinnell 1902). However, Grinnell and Wythe (1927) did not record this nighthawk as occurring in the Bay area. Following publication, W. E. Unglish (1929) reported that he had collected egg sets of this species along Uvas Creek, Santa Clara County, since 1894 and that in the 1920s D. Bernard Bull had also found it breeding along Coyote Creek. Later, Pickwell and Smith (1938) reported extensively on the nighthawk's nesting behavior along Coyote Creek. Bull noted on an earlier egg slip (WFVZ 144649): "This locality, Uvas creek, and at Coyote are the only places I've found this species nesting. The breeding ground at Coyote is now covered over by water because of a dam. There are only two pairs breeding at Uvas creek this (1936) year." Lesser Nighthawks still breed in the San Joaquin Valley as close to the Bay area as San Joaquin County (NASFN 49:976, 1995). The eastern portions of Alameda, Contra Costa, and Solano counties are within the Great Valley faunal district (Miller 1951), which also includes San Joaquin County. Although there are no historical records of breeding from the three counties, Lesser Nighthawks are occasionally recorded in eastern Contra Costa County (NASFN 52:387, 1998) and may breed casually. Records: Two eggs collected, Uvas Creek, 2 mi. west of Gilroy, Santa Clara County, 17 May 1937 (WFVZ 30991).

Willow Flycatcher (*Empidonax traillii*). Grinnell and Wythe (1927) considered the Willow Flycatcher "sparingly summer resident" and recorded nesting only from Pleasanton in Alameda County and Alviso, Palo Alto, and Santa Clara in Santa Clara County. Breeding in San Mateo County as well as at other locations in Alameda and Santa Clara counties is attested by egg sets in various collections (WFVZ, CAS, USNM). Willow Flycatchers appear to have nested fairly regularly in Santa Clara County riparian areas through the mid-20th century with the last nesting birds found along Guadalupe River in 1962 by Donald D. McLean. Unitt (1987) described the northwestern breeding limit of the subspecies *E. t. extimus* as the rivers and streams on the coastal plain of southern California and the Kern River, thus birds breeding in the Bay area were of the subspecies *brewsteri*; see also Browning (1993). The ranges of both *brewsteri* and *extimus* retracted significantly in California over the latter half of the 20th century (Harris et al. 1987, Unitt 1987). The loss of riparian habitat and parasitism by the Brown-headed Cowbird are both factors that may have influenced these population declines. Brown-headed Cowbirds were first found in the Bay area in Alameda County in 1922 (La Jeunesse 1923), and C. P. Smith (1926) found a parasitized Willow Flycatcher nest along Guadalupe Creek as early as 3 Jul 1926. Records: Four eggs collected, San Francisquito Creek, San Mateo County, 13 Jun 1901 (WFVZ 75064). Three eggs collected, Alameda County, 16 Jun 1920 (WFVZ 49790). Nesting pair, Guadalupe River, Santa Clara County, 1962 (AFN 16:445, 1962).

New Species

Forty-seven species have been found breeding since 1927 and are listed in Table 3. In the following accounts, the first breeding records within the Bay area counties are listed in chronological order.

Mute Swan (*Cygnus olor*). Widely introduced in both the Old and New worlds, the Mute Swan has now established feral populations in both Sonoma and Marin counties (Middle Pacific Coast region notebooks) and, apparently, in Contra Costa County. Records: Nested, Marin County, about 1990 (R. Stallcup, Middle Pacific Coast region notebooks). Nested, Schollenberger Park, Petaluma, Sonoma County, about 2000 (R. Stallcup, Middle Pacific Coast region notebooks). Apparently nesting, Concord Naval Weapons Station, Contra Costa County, prior to 2005 (S. A. Glover).

Gadwall (*Anas strepera*). Grinnell and Wythe (1927) considered the Gadwall a "rare winter visitant." Since 1927 this species has slowly become more common. Its breeding was first noted in Sonoma and Alameda counties in 1965, in Santa Clara County in 1967, and in Solano County in 1969. Today it appears to nest regularly in all of the Bay area counties. This change in status is part of a significant expansion of the Gadwall's breeding range over the last 50 years throughout North America and Europe (LeSchack et al. 1997). Although reservoir construction and other water projects may have assisted this expansion, its cause on the broad scale is not understood (LeSchack et al. 1997). Records: Nested near Alvarado, Alameda County, prior to 1965 (AFN 19:574, 1965). Forty females and immatures, Tubbs Island, Sonoma County, 18 Aug 1965 (AFN 20:88, 1966). Nesting, Palo Alto Baylands, Santa Clara County, 1967 (AFN 21:601, 1967). Leslie Salt Ponds, Solano County, 19 Jul 1969 (AFN 23:690, 1969). Ducklings, Redwood Shores, San Mateo County, June 1974 (P. J. Metropulos). Nested, San Antonio Creek, Marin County, 6 May 1979 (Shuford 1993). Nest and eggs, Huichica Creek, Napa County, 13 Jun 1986 (Berner et al. 2003). Nested, Shell Marsh, Contra Costa County, 30 Jun 1995 (NASFN 49:975, 1995). Ducklings, Mallard Lake, Golden Gate Park, San Francisco County, 12 Jun 1999 (*fide* D. Singer).

American Wigeon (*Anas americana*). Small (1994) noted that this wigeon breeds sparingly in northeastern California, the Sacramento Valley, and the San Joaquin Valley as far south as Merced County. The only known nestings in the Bay area are two from Alameda and San Mateo counties. Records: Female with three ducklings, Hayward Regional Shoreline, Alameda County, 12 Jun 2000 (NAB 54:420, 2000). Female with six ducklings, Redwood Shores, San Mateo County, 21 Jun 2005 (R. S. Thorn). An unpublished 1984 record of the American Wigeon nesting on Brooks Island, Contra Costa County, cited by Shuford (1993), was the result of a data entry error in the Middle Pacific Coast region notebooks (S. F. Bailey pers. comm.).

Blue-winged Teal (*Anas discors*). Grinnell and Wythe (1927) considered the Blue-winged Teal a rare visitant to the Bay area. Its winter status appears little changed since 1927. Its breeding has been noted on four occasions since 1974, and the pattern of nesting appears to be sporadic. However, see Shuford (1993) concerning the difficulties in distinguishing breeding Blue-winged Teal from the more common Cinnamon (*A. cyanoptera*). Records: Ducklings, Palo Alto Baylands, Santa Clara County, 21 May 1974 (AB 28:846, 1974). Nested, Olema Marsh, Marin County, May 1997 (NASFN 51:923, 1997). Female with ducklings, McNabney Marsh, Contra Costa County, 8 Jun 2000 (NAB 54:420, 2000). Six ducklings, Hayward Regional Shoreline, Alameda County, 18 Jun 2000 (NAB 54:420, 2000).

Canvasback (*Aythya valisineria*). The Canvasback has bred sporadically in northeastern California and the Sacramento and San Joaquin valleys in the last 25 years (multiple records in *North American Birds*). It is a common winter visitant in the San Francisco Bay area, and a few birds are found in most summers. But there is only one breeding record for the Bay area: Half-grown young, Guadalupe Slough, Santa Clara County, 16 Jun 1989 (AB 43:1363, 1989).

Ring-necked Duck (*Aythya collaris*). Since the 1970s Ring-necked Ducks have

bred occasionally in such northern California counties as Del Norte, Lassen, and Plumas (multiple records in *North American Birds*). Few birds oversummer in the San Francisco Bay area. Only one nesting in the Bay area is known: Half-grown young, Calaveras Reservoir, Santa Clara County, 8 Aug 1997 (NASFN 51:1049, 1997).

Hooded Merganser (*Lophodytes cucullatus*). Grinnell and Wythe (1927) judged the Hooded Merganser to be a rare winter visitant in the Bay area. The first known breeding in California was on Mountain Meadows Reservoir, Lassen County, in 1964 (AFN 18:483, 1964). In the last decade, there has been a notable expansion of breeding Hooded Mergansers south through the Central Valley, including one record in the Bay area: 7 hatchlings, Lake Sonoma, 1999 (Pandolfino et al. 2006).

Common Merganser (*Mergus merganser*). Grinnell and Wythe (1927) considered the Common Merganser a fairly common winter visitant, but there is no evidence that it nested in the Bay area in 1927. Grinnell and Miller (1944) indicated that the species nested south along the coast only as far the Navarro River in Mendocino County. At least in some years, however, there is evidence that this merganser bred much farther south. Two broods of young were found along the Nacimiento River in southern Monterey County in June 1939 (Bird-Lore 41:262, 1939), and a nest and eggs were collected in San Luis Obispo County on 25 Apr 1941 (MVZ 5130). Eleven female-plumaged Common Mergansers on Calaveras Reservoir, Santa Clara County, 13 Jul 1971 (AB 25:900, 1971) suggested local nesting, but the first Bay area confirmation did not come until 1979. The Common Merganser is now a regular breeding species along streams and at reservoirs throughout the Bay area (Figure 2). Records: Ducklings, Salmon Creek, Sonoma County, 4 Aug 1979 (AB 33:893, 1979). Ducklings, Kent Lake, Marin County, 27 Jun 1981 (AB 35:974, 1981). Ducklings, Coyote Creek, Henry Coe State Park, Santa Clara County, 29 Jun 1986 (J. Yurchenco, A. Lauterbach). Ducklings, Lake Berryessa at Putah Creek, Napa County, summer 1988 (P. Carlisle *fide* W. T. Grummer, Berner et al. 2003). Ducklings, Crystal Springs Dam, San Mateo County, 14 Jul 1992 (AB 46:1174, 1992). Confirmed in 3 blocks, Alameda County, 1993–1997 (Alameda Breeding Bird Atlas, pre-final summary *fide* H. L. Cogswell).

Wild Turkey (*Meleagris gallopavo*). The Wild Turkey is not native to the San Francisco Bay area. Introduced birds were observed in Alameda County as early as 1965 as noted below. There have been a number of releases in the interior counties since 1970, mostly of subspecies *M. g. intermedia* from Texas (S. Gardner pers. comm.). These birds appear to have established viable breeding populations in eight of the Bay area counties. Records: Introduced in Arroyo Mocho, Alameda County, prior to 1965 (H. L. Cogswell); for this area a nest with eggs, Mines Road, 19 Apr 1986 is the earliest evidence of breeding (AB 40:519, 1986). Breeding at least since 1972, Santa Clara County (AB 27:814, 1973). Introduced to Healdsburg, Sonoma County, Mar 1978 (S. Gardner). Nest with eggs, Green Valley near Wild Horse Creek, Solano County, 15 May 1983 (C. Low *fide* R. L. C. Leong); introduced Fairfield, Solano County, Feb 1983 (S. Gardner). Fledged young, Silverado Trail, Napa County, 22 Jun 1986 (P. Broyles *fide* W. T. Grummer); introduced Pope Valley, Feb 1970 (S. Gardner). Introduced Morgan Territory Preserve, Contra Costa County, 1990 (S. Gardner). Chicks, Long Ridge Open Space Preserve, San Mateo County, 25 May 1997 (Sequoia Audubon Society 2001).

Least Bittern (*Ixobrychus exilis*). There are several early records of the Least Bittern breeding from Merced County (CAS, WFVZ egg sets). It is a regular summer resident and assumed breeder in the Central Valley (J. C. Sterling unpubl. data). But only one instance of nesting is known from the Bay area: Fledged young, Olema Marsh, Marin County, 25 Jul 1998 (NASFN 52:499, 1998).

Snowy Egret (*Egreta thula*). Little historical information exists for the Snowy Egret

Figure 2. Common Merganser young, inlet to Almaden lake, Santa Clara County, 22 June 2001.

Photo by Peter LaTourrette

in California prior to the devastation wrought by the plume hunters that supplied the millinery trade in the late 19th and early 20th centuries. James G. Cooper (Baird et al. 1884) considered the species common in southern California but did not observe breeding. Evermann (1886), without details, stated that it nested in Ventura County between 1879 and 1881. Although W. L. Dawson believed that this egret was a regular nesting species in the state prior to the plume-hunting era, no breeding was documented until 1914, when he discovered a nest in Merced County (Dawson 1915). Grinnell and Wythe (1927) considered the Snowy Egret a rare straggler to the Bay area. Nesting was first observed on West Marin Island about 1952 (Shuford 1993), but no further colonies formed until the 1960s, when breeding birds were found in Contra Costa and San Mateo counties. Today there are colonies in most years in all of the Bay area counties. This egret's establishment in the Bay area broadly parallels its resettlement along North America's east coast, where birds returned to nest in New Jersey in 1939 and in Maine in 1961 (Parsons and Master 2000). Notable breeding records in the West include breeding in Arizona in 1947 and in Oregon in the 1940s (Parsons and Master 2000). Records: Nested on West Marin Island, Marin County, by about 1952 (Shuford 1993). One hundred pairs in heronry on Brown's Island, Contra Costa County, 17 Apr 1962 (AFN 16:503, 1962). Fifty to 100 pairs nested on Bair Island, San Mateo County, 8 May 1967 (AFN 21:536, 1967). Nest with young, Gum Tree Road, Grizzly Island, Solano County, Jun 1976 (Z. Labinger *fide* R. L. C. Leong). One hundred fifty pairs nested at the Alviso heronry, Santa Clara County, 18 Apr 1980 (AB 34:811, 1980). Nested in Penngrove, Sonoma County, 1991 (Burridge 1995). Five nests, Napa State Hospital, Napa County, 14 Jun 1992 (AB 46:1174, 1992). Nested at Hayward Regional Shoreline, Alameda County, 1994 (NASFN 48:984, 1994).

Little Blue Heron (*Egretta caerulea*). The Little Blue Heron was unrecorded in

California in 1927. The first accepted record in the state was of an immature found at Bodega Bay, Sonoma County, on 7 Mar 1964 and collected on 15 Mar (Jeter and Paxton 1964). Since the first observed nesting of the Little Blue in the heronry in Alviso, Santa Clara County, in 1980, nesting has also been recorded there in 1993 (AB 47:1146, 1993), and 1994 (NASFN 48:984, 1994). Through 2005, at least one adult Little Blue Heron has been found within the South San Francisco Bay salt ponds every summer since the initial nesting, but the species remains a very rare summer visitant at this location, and its status is unclear. Record: Nested at the Alviso heronry, Santa Clara County, 1980 (AB 34:925, 1980).

Cattle Egret (*Bubulcus ibis*). Like the Little Blue Heron, the Cattle Egret was absent from California in 1927. Following its invasion of the Americas, the Cattle Egret was first observed in the state in Orange County in 1962, and the first breeding was recorded in Imperial County in 1970 (Small 1994). After the first breeding in the Bay area at the Alviso heronry in 1985, nesting was reported at this location also in 1988 (AB 42:1336, 1988) and 1993 (AB 47:1146, 1993). One to two nests were also observed in the Alviso heronry 1995–1997 but not subsequently (Cheryl M. Strong, San Francisco Bay Bird Observatory, pers. comm.). Telfair (1994) characterized this species' range expansion as occurring in "widespread, explosive, grenadelike leaps, not concentric waves." It is too early, perhaps, to define a pattern from the few known nestings in the Bay area. Records: Ten nests, Alviso heronry, Santa Clara County, 22 May 1985 (AB 39:345, 1985). On nest, west Santa Rosa, Sonoma County, May 1995 (Burridge 1995). On nest, Hayward Regional Shoreline, Alameda County, 13 Apr 2001 (NAB 55:352, 2001).

White-faced Ibis (*Plegadis chihi*). The White-faced Ibis nested widely in the San Joaquin Valley in the decades before Grinnell and Wythe (1927) published their summary (egg collections, MVZ, CAS, WFVZ). As of 1927, however, there were only two records from the Bay area. Grinnell and Miller (1944) noted a general decline in numbers, primarily from loss of habitat, and this appears to have continued into the 1960s and 1970s, not only in California, but widely in the West (Ryder and Manry 1994). Then, in the last two decades of the 20th century, there was a general increase (Ryder and Manry 1994), and in the Central Valley this has been reflected in new breeding colonies in northern California in Colusa, Fresno, Kings, Yolo, Siskiyou, and Shasta counties from 1979 to 1995 (AB reports). But in the San Francisco Bay area the only records are of ibises observed carrying sticks into the Alviso heronry, Santa Clara County, 1991 and 1992 (D. Starks, P. Woodin).

Wilson's Phalarope (*Phalaropus tricolor*). Grinnell and Miller (1944) reported that Wilson's Phalarope nested regularly in northeastern California and south to Inyo County east of the Cascade–Sierra crest, occasionally in the Central Valley. Subsequently there have been a number of reports of nesting or attempted nesting in the Central Valley (NAB) but only two breeding records in the Bay area. Records: Chicks, Cader Lane Ponds, Sonoma County, 26 Jun 1982 (Burridge 1995). Chicks, Jepson Prairie Preserve, Solano County, 29 Jun 2005 (J. Steinhert).

Heermann's Gull (*Larus heermanni*). Grinnell and Wythe (1927) reported Heermann's Gull as a visitor to the Bay area from June to October. Records: One pair nesting unsuccessfully, Alcatraz Island, San Francisco County, summer 1979, 1980, and 1981 (Howell et al. 1983). One pair nested, Año Nuevo Island, San Mateo County, spring 1994 (NASFN 48:339, 1994); although the young hatched, they suffered predation by Western Gulls (*L. occidentalis*) (Roberson et al. 2001).

California Gull (*Larus californicus*). Although California Gulls occasionally nested along flooded areas of the Sacramento River at the beginning of the 20th century (Shuford and Ryan 2001), Grinnell and Wythe (1927) noted only small numbers of

immature or nonbreeding birds in the Bay area through the summer and did not record evidence of breeding. Since first colonizing levees beside an abandoned salt pond near Alviso, Santa Clara County, in 1980, breeding California Gulls have expanded into Alameda, San Francisco, and Contra Costa counties, and the number of nesting birds has increased by 25% a year (Shuford and Ryan 2001) (Figure 3). There is some evidence that the whole species' population increased in the 20th century (Conover 1983), although this increase has been debated (Shuford and Ryan 2001). Records: Twelve pairs, Alviso salt ponds, Santa Clara County, 1980 (Jones 1986). Colony, salt ponds near Newark, Alameda County, 21 Jun 1983 (AB 37:1024, 1983). Nesting, Alameda Naval Air Station, Alameda and San Francisco counties, 1993 (Shuford and Ryan 2000). Four nests, Brooks Island, Contra Costa County, 14 Jun 2000 (S. Bobzien *fide* S. A. Glover).

Arctic Tern (*Sterna paradisaea*). One record: A female Arctic Tern summered regularly at the Hayward Regional Shoreline, Alameda County, in the late 1990s. It paired with a male Forster's Tern in 1999 and laid three eggs. Two chicks died, but one fledged about 5 Aug 1999 (NAB 53:429, 1999). The female Arctic Tern again paired with a Forster's Tern in 2000 but abandoned the nesting attempt. The hybrid young also returned to this location in 2000 (NAB 54:420, 2000).

Forster's Tern (*Sterna forsteri*). In the West, the greatest concentration of breeding Forster's Terns is in the ephemeral lakes, reservoirs, and marshes of the Great Basin near the Oregon, California, and Nevada borders (McNicholl et al. 2001). In California, at the beginning of the 20th century, Forster's Tern was believed to nest only on these interior lakes (Grinnell 1902). In the Bay area it was a common spring and fall migrant; Grinnell and Wythe (1927) considered the record of one along the shore of Alameda County on 10 Jun exceptional. Since the discovery of a colony at the east end of the San Mateo Bridge in 1948, this tern has also nested in Marin, Solano, and

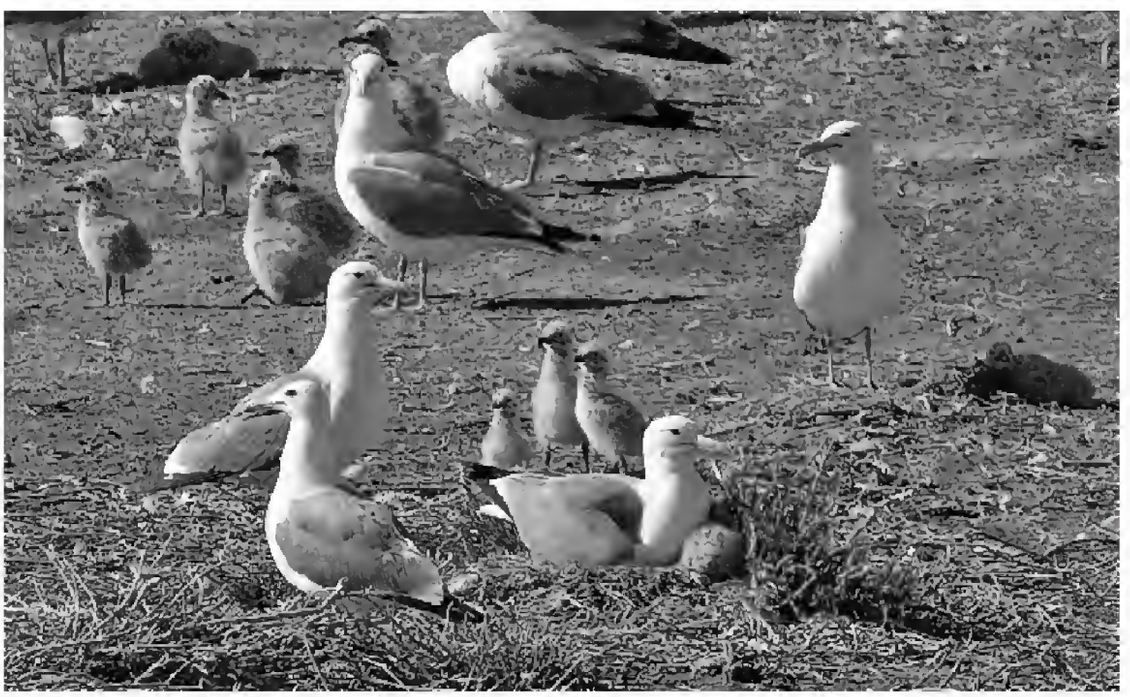

Figure 3. California Gull nestlings, Mountain View salt ponds, Santa Clara County, 5 June 2004.

Photo by William G. Bousman

Napa counties, but the largest concentrations are found in the southern portion of San Francisco Bay (Figure 4). The colonization of San Francisco Bay appears to be part of a general coastal expansion with first breeding records in San Diego Bay in 1962 and in Baja California in 1990 (McNicholl et al. 2001). Records: One hundred active nests, east end of San Mateo Bridge, Alameda County, 1948 (AFN 2:187, 1948; Gill 1977). Approximately six colonies, Alviso and vicinity, Santa Clara County, 1971 (Gill 1977). One hundred nests on Bair Island, San Mateo County, 1973 (AB 27:914, 1973). Twenty nests near Vallejo, Solano County, 1987 (AB 41:1483, 1987). Nesting, Russ Island and Island No. 2, Napa County, 1989 (AB 43:1364, 1989). Three nests, Corte Madera, Marin County, 1998 (NAB 54:420, 1998).

Least Tern (*Sternula antillarum*). Two Least Terns near Alameda, Alameda County on 19 Aug 1923 were the only ones recorded in the Bay area before 1927. In the first half of the 20th century this tern nested commonly along Monterey Bay in Monterey and Santa Cruz counties (Bailey 1993). Egg sets were collected in Santa Cruz County as late as 1940 and in Monterey County through 1956 (WFVZ). A

Figure 4. Forster's Terns courting, Shoreline Lake, Santa Clara County, 12 June 2005.

Photo by Tom Grey

concentration of 50 birds in South San Francisco Bay on 27 Sep 1933 (Bird-Lore 35:337 1933) suggested a postbreeding movement, but it is not known whether these birds came from the Monterey Bay colonies or elsewhere. Since the first three nests were found at Alameda in 1967, this endangered species has nested within the Bay area primarily in Alameda County but also in San Mateo and Contra Costa counties. Records: Three juveniles, one fed with small fish, Alameda, Alameda County, 2 Aug 1959 (Middle Pacific Coast region notebooks *fide* H. Green). Three nests, Alameda, Alameda County, Jun 1967 (AFN 21:602, 1967). Nesting, Bair Island, San Mateo County, 8 Jul 1969 (AFN 23:691, 1969). Six nests, Pittsburg, Contra Costa County, 1984 (AB 38:1058, 1984).

Black Skimmer (*Rynchops niger*). The Black Skimmer was first recorded in California in 1962 (McCaskie and Suffel 1971) and first found nesting at the Salton Sea in 1972 (McCaskie et al. 1974). It began to nest at San Diego Bay in 1976 and in coastal Orange County by 1985 (Small 1994). In the Bay area breeding was first recorded in 1994 with pairs in both Alameda and Santa Clara counties. Since the initial invasion one or more pairs have attempted to nest in each subsequent year. Records: One pair nesting, Hayward Regional Shoreline, Alameda County, 9 Jun 1994 (Layne et al. 1996). One pair nesting, salt pond B2 (Jaegel Slough), Santa Clara County, 19 Jun 1994 (Layne et al. 1996). Nested unsuccessfully, Menlo Park salt ponds, San Mateo County, 2 Jul 1996 (NASFN 50:993, 1996).

Marbled Murrelet (*Brachyramphus marmoratus*). Grinnell and Wythe (1927) considered the Marbled Murrelet to be a fairly common winter visitant on the open ocean, but this alcid's unusual habit of nesting away from the coast in old-growth forest was not known in their day. Grinnell and Miller (1944) noted one inland along Pescadero Creek, San Mateo County, on 24 Aug 1904, and Dawson (1923) found one inland along Big Creek in nearby Santa Cruz County in 1914. A fledgling found in Pescadero Creek, San Mateo County, in 1957 (Anderson 1972) preceded the discovery of the first nest of this species anywhere along the Pacific coast on 7 Aug 1974 in Big Basin State Park, Santa Cruz County (Binford et al. 1975). The Marbled Murrelet's breeding biology is better understood today, and the species is known to breed in three regions along the California coast: Del Norte and northern Humboldt counties, south-central Humboldt County, and San Mateo and Santa Cruz counties (Carter and Erickson 1992). Although historical data are limited, there has been a general decline in numbers since the last century, and the murrelet is now missing from its former range in Mendocino and Sonoma counties (Nelson 1997). Despite the absence of breeding evidence for this rare murrelet in 1927, at that time it likely bred within San Mateo County and possibly in Sonoma and Marin counties as well. Record: Fledgling or juvenile, Portola State Park, San Mateo County, 15 Jun 1957 (Anderson 1972).

Spotted Owl (*Strix occidentalis*). Grinnell and Wythe (1927) knew of only three records of the Spotted Owl in the Bay area, all from Marin County. They judged this owl to be very rare but did not indicate its breeding status. Currently, the species is found regularly in Sonoma County with about 70 pairs (Burridge 1995), Marin County with 25–30 pairs (Shuford 1993), and Napa County with 25 pairs (Berner et al. 2003). There is yet no evidence of breeding for San Mateo County, although several pairs are apparently resident there (P. J. Metropulos pers. comm.). The historical distribution of this species is probably the same as the current distribution (Gutiérrez et al. 1995), and the lack of observed breeding evidence in 1927 is likely a result of this owl's secretiveness and nocturnal behavior. Records: On nest, near Phoenix Lake, Marin County, 14 Mar 1976 (Shuford 1993). Nest with young, Bothe-Napa State Park, Napa County, 19 May 1982 (W. T. Grummer). Confirmed nesting, Sonoma County, 1986 (Burridge 1995).

Northern Saw-whet Owl (*Aegolius acadicus*). Grinnell and Wythe (1927) consid-

ered the Northern Saw-whet Owl a rare and irregular winter visitant, listing only a single record for Sonoma County, three for Marin County, and one for San Mateo County. The first evidence for breeding in the Bay area was the discovery of a pair using nest boxes put out for Western Screech-Owls (*Megascops kennicottii*) in the Spring Valley Creek drainage of San Mateo County (Granfield 1937). The Saw-whet is now known to be an uncommon but widespread breeding species in the Bay area's coniferous forests. Currently, it is more common in Sonoma and Marin counties than the Spotted Owl, yet both counties have more confirmations of Spotted Owl nesting than of the Saw-whet, undoubtedly because the endangered status of the former has attracted more study. The lack of breeding evidence in 1927 is likely the result of the Saw-whet's secretive nature. Records: Six eggs, Spring Valley Lakes, San Mateo County, 18 Apr 1937 (Granfield 1937). Called regularly in Redwood Canyon, Alameda County, 1950s and 1960s (*fide* H. L. Cogswell). Injured juvenile, Stevens Creek County Park, Santa Clara County, spring 1969 (E. McClintock *fide* D. L. Suddjian). Nested, Sonoma County, 1976 (Burridge 1995). Two confirmations, Marin County, 1976–1982 (Shuford 1993). Nest with young, Napa, Napa County, 14 May 1985 (Berner et al. 2003). Confirmed in seven blocks in the Santa Cruz Mountains, Santa Clara County Breeding Bird Atlas, 1987–1993 (unpubl. data).

Black Swift (*Cypseloides niger*). The Black Swift was first found breeding in central California when Vrooman (1901) discovered a nest and egg in sea cliffs near Santa Cruz, Santa Cruz County. With only three records through 1927, however, Grinnell and Wythe considered this swift a rare migrant in the Bay area. The species was not proved to breed along the coast of San Mateo County until 1971, but possibly it has nested on these sea cliffs more or less regularly. The Black Swift is now apparently in decline along the Central California coast and may no longer breed in either San Mateo or Santa Cruz counties (NAB 55:479, 2001). Record: Nest with egg, Año Nuevo Point, San Mateo County, 4 Jul 1971 (AFN 25:903, 1971).

Costa's Hummingbird (*Calypte costae*). Grinnell and Wythe (1927) knew of only two records of this hummingbird in the Bay area. Grinnell and Miller (1944) noted that the species nested sparsely on the west side of the San Joaquin Valley as far north as Dos Palos, Merced County. Since the first recorded nesting in the Bay area Costa's Hummingbird has been found to breed regularly at the mouth of Del Puerto Canyon, Stanislaus County, but only casually in the northern Diablo Range. Records: Female and fledged young, San Jose, Santa Clara County, July 1960 (McLean 1969). Nest-building and nest with young, Arroyo Valle, Alameda County, 20 May and 19 Jun 1995 (NASFN 49:306, 1995, M. M. Rogers).

Red-breasted Sapsucker (*Sphyrapicus ruber*). Grinnell and Wythe (1927) considered the Red-breasted Sapsucker to be a winter visitant in limited numbers and did not mention any summer records from the Bay area. Grinnell and Miller (1944) considered the southern limit of this sapsucker's breeding range as central Mendocino County. The first confirmation of breeding in the Bay region was of adults feeding young in northern Sonoma County in 1979 (Burridge 1995). Birds were also found nesting in Marin County during that county's atlas work in 1980 and 1982 (Shuford 1993). This range has now been extended to include San Mateo County with at least one record from Solano County. Shuford (1986) concluded that field work in Sonoma and Marin counties prior to 1944 was inadequate to define the southern limit of this species' breeding range accurately. He considered it likely that the Red-breasted Sapsucker had always nested in low numbers in Sonoma and Marin counties. It seems unlikely, however, that that this species nested farther south. From 1935 to 1939, Orr (1942) surveyed the avifauna of the Big Basin area along the western slope of the Santa Cruz Mountains. He spent 176 days in the field, 117 of them from April through August. Approximately 60% of the study area was in San Mateo County, the remainder in Santa Cruz County. During his surveys he did not encounter any Red-breasted Sap-

suckers. Although breeding Red-breasted Sapsuckers may have been overlooked in Sonoma and Marin counties in the past, the establishment of breeding birds in the Santa Cruz Mountains is believed to be recent (D. L. Suddjian pers. comm.). Records: Nested, Gualala River at Skaggs Springs Road, Sonoma County, 1979 (Burridge 1995). Confirmed breeding in two atlas blocks, Marin County, 1976–1982 (Shuford 1993). Nested, near Pescadero, San Mateo County, 1995 (NASFN 49:306, 1995). Nestling found and rehabilitated in Vacaville, Solano County, 5 May–27 Jun 2000 (*fide* R. L. C. Leong).

Pileated Woodpecker (*Dryocopus pileatus*). The Pileated Woodpecker was considered rare by Grinnell and Wythe (1927), with observations noted from parts of Sonoma and Marin counties. These records suggest that this woodpecker may have been a sporadic breeder there, although there is no specific evidence. The first clear evidence of breeding of this vocal woodpecker in the Bay area was in Napa County prior to 1944 (Hemphill 1944). From the 1960s to the 1980s, breeding was also observed in Sonoma and Marin counties. South of the Golden Gate, Orr (1942) never observed the Pileated Woodpecker in the Big Basin region, an area where it is now regular. It began to be recorded in the Santa Cruz Mountains in the early 1970s (AB 26:805, 1972), and the first nesting in this area was in Big Basin State Park in Santa Cruz County on 30 Jun 1987 (AB 41:1484, 1987) (Figure 5). Records: Fledglings, Los Posadas State Forest, Napa County, prior to 1944 (Hemphill 1944). Nested, Glen Ellen, Sonoma County, 2 Jun 1963 (AFN 17:482, 1963). Nested, Lake Lagunitas, Marin County, 1976 (AB 30:884, 1976). Fledglings, San Mateo County, 29 Jul 1988 (Sequoia Audubon Society 2001). Fledglings, Lake Elsman, Santa Clara County, 18 Jun–8 Jul 1996 (NASFN 50:993–994, 1996).

Cassin's Kingbird (*Tyrannus vociferans*). Grinnell and Wythe (1927) did not record any observations of Cassin's Kingbird from the Bay area as of 1927. Just to the south, near Paicines, San Benito County, the Mailliards considered Cassin's Kingbird to be a common summer resident, although not so common as the Western Kingbird (Mailliard and Mailliard 1901). The northwest edge of the Cassin's Kingbird's breeding range runs roughly from southwestern San Joaquin County on a line to the coast at the Monterey–San Luis Obispo County boundary (Tweit and Tweit 2000). Over the last 30 years this kingbird has sporadically bred north of this line. Records: Feeding young, near Livermore, Alameda County, 26 Jun 1968 (AFN 22:645, 1968). Nested, near Bolinas, Marin County, 1972 (Shuford 1993). Nested, San Felipe Road, Santa Clara County, 13 Apr 1997 (NASFN 51:924, 1997). Feeding nestlings, Vallejo, Solano County, 30 May 2005 (R. L. C. Leong, T. Jenkins).

Bell's Vireo (*Vireo bellii*). Grinnell and Wythe (1927) knew of only one record of Bell's Vireo in the Bay region, a specimen collected by Chase Littlejohn at Redwood City, San Mateo County, in 1905. The first records of breeding in the San Francisco Bay area were in 1932. Grinnell and Miller (1944) showed the breeding range of Bell's Vireo as including the eastern portions of Solano, Contra Costa, and Alameda counties and the southern edge of Santa Clara County. It appears, at best, that this vireo was very rare in these areas but was found more commonly to the east in the Central Valley. By the 1970s, however, Bell's Vireo was extirpated from all of northern and central California (Goldwasser et al. 1980). The collapse of the California population is believed to have been caused by cowbird parasitism and habitat destruction, although in some areas it is unclear which factors were most important. To assist or restore the species' populations cowbird control has been undertaken in southern California in areas where Bell's Vireos still breed. It seems likely that a pair of nesting Bell's Vireos found near Gilroy in May 1997 (NASFN 51:924, 1997) is related to these recovery efforts. Records: Eggs collected, near Gilroy, Santa Clara County, 19 (per publication) or 29 Apr (per egg-data card) 1932 (Unglish 1937, WFVZ 31088). Dependent juvenile collected, Corral Hollow, southeast Alameda County, 13 (per

Figure 5. Pileated Woodpecker and nestlings, Table Mountain, Santa Clara County, 14 June 1998.

Photo by Alan K. Walther

specimen label) or 15 (per publication) Jun 1932 (G. L. Bolander, MVZ 60897, Bird-Lore 34:349, 1932), although there is some uncertainty whether the bird was in Alameda or San Joaquin County (Sibley 1952). Nestling banded, somewhere between Livermore, Alameda County, and Tracy, San Joaquin County on 31 May 1937 (R. Taylor, News from the Bird-Banders 14:23 1937; Gull 19(7) 1937). Again, there is some uncertainty as to the exact location.

Gray Jay (*Perisoreus canadensis*). Grinnell and Wythe (1927) did not record the Gray Jay anywhere in the Bay area. Grinnell and Miller (1944) considered the southern limit of the species' breeding range to be Humboldt and Del Norte counties, with birds possibly resident in the northwestern corner of Mendocino County. Small (1994) noted a southern expansion of this range on the coast to the Navarro River, Mendocino County, as well as inland in Mendocino County in the coast range. Record: Adult feeding a fledgling, Gualala Point State Park, Sonoma County, 7 Aug 1995 (Burridge 1995).

Red-breasted Nuthatch (*Sitta canadensis*). Grinnell and Wythe (1927) considered the Red-breasted Nuthatch an irregularly common fall and winter visitant to the Bay region. Although they had no evidence of breeding, Grinnell and Wythe did mention that it had been found in Douglas firs (*Pseudotsuga menziesii*) west of Cazadero in Sonoma County in the summer and that possibly it was a regular breeder there. The Red-breasted Nuthatch now nests in all the Bay area counties except Solano. Ghalambor and Martin (1999) reported a southward expansion of the species' range in the Midwest, ascribing to increases in planted coniferous forests. Similar changes, however, have not been noted in this nuthatch's western range. Records: Nested in a box, Diamond Canyon, Alameda County, 15 May 1932 (Condor 34:234). Probable breeding, Mt. Tamalpais, Marin County, 11 Jun–21 Jul 1936 (Condor 39:38). Nestlings, Castle Rock State Park, Santa Clara County, 14 Jun 1953 (AFN 7:325, 1953). Nested, Golden Gate Park, San Francisco County, 1953 (AFN 7:289, 1953). Nested, Annadel State Park, Sonoma County, 19 Jun 1982 (AB 36:1013, 1982). Feeding young, San Mateo County, 5 Jun 1990 (Sequoia Audubon Society 2001). Fledglings, near Atena Springs, Napa County, 14 Jul 1990 (AB 44:1183, 1990).

Varied Thrush (*Ixoreus naevius*). Grinnell and Wythe (1927) listed the Varied Thrush as a winter visitant in variable numbers in the San Francisco Bay Area. With respect to breeding, Grinnell and Miller (1944) noted records only from the northwest corner of California in Del Norte, Humboldt, and Trinity counties. Since breeding was first observed in the wet coastal forests of the Santa Cruz Mountains in San Mateo County in 1991, one or more pairs have bred at scattered locations within these forests in San Mateo and Santa Cruz counties (David L. Suddjian, pers. comm.). The paucity of summer records prior to 1991 suggests that this colonization is recent (D. L. Suddjian, P. J. Metropulos, pers. comm.). Records: Nests, Butano State Park and Butano Creek, San Mateo County, 21 Jun 1991 (AB 45:1159, 1991).

Northern Mockingbird (*Mimus polyglottos*). Phillips (1928) reported that a country club in San Francisco imported Northern Mockingbirds from Louisiana in 1891 and attempted to establish them in the city. Apparently this attempt failed, and Grinnell and Wythe (1927) did not mention it. At the end of the 19th century the Northern Mockingbird was more common on the coastal slope of southern California but was also resident in the San Joaquin and Salinas valleys (Grinnell 1902). Arnold (1935, 1980) documented the mockingbird's northwestward expansion, and it is now a common breeding species throughout the Bay area. Arnold (1980) concluded that the planting of various fruiting trees in urban areas was a major cause of the mockingbird's expansion. Derrickson and Breitwisch (1992) reported that this species has also increased its range along North America's east coast in recent decades. Records: Four nestlings, Gilroy, Santa Clara County, 12 May 1928 (Sibley 1952). Nested, Walnut Creek, Contra Costa County, 1929 (Arnold 1935). Nested, Hayward, Alameda County, 1930 (Arnold 1935). Nested, Benicia, Solano County, 23 Apr 1934 (Condor 36:253). Attending young, Tulocay Cemetary, Napa, Napa County, March 1935 (E. L. Bickford *fide* W. T. Grummer). Nest, south of Sonoma, Sonoma County, 1959 (AFN 13:397–398, 1959). Probably nesting by early 1960s, Marin County (Shuford 1993). Fledged young, Belmont, San Mateo County, summer 1980 (P. J. Metropulos). Confirmed in five atlas blocks, San Francisco County, 1991–1992 (*fide* D. Singer).

European Starling (*Sturnus vulgaris*). From its initial release in New York City, the European Starling swept west across the continent. The vanguard of this expansion was normally composed of winter flocks, and the species colonized a few years after the vanguard's arrival (Cabe 1993). Using Christmas Bird Count data, DeHaven (1973) documented the exponential growth in wintering flocks in California from 1953 to 1971. Breeding records followed in Santa Clara and Alameda counties in 1963 (AFN

17:483, 1963) and in San Francisco in 1964 (Tenaza and Tenaza 1966). Starlings now breed abundantly throughout the Bay area. Records: Nested, Stanford, Santa Clara County, Apr 1963 (AFN 17:483, 1963). Nested, Bay Farm Island, Alameda County, Apr 1963 (AFN 17:483, 1963). Nest with young, near Lake Merced, San Francisco County, 8 May 1964 (Tenaza and Tenaza 1966). Nest with eggs, Belmont, San Mateo County, spring 1971 (P. J. Metropulos). Nest building, River Park, Vallejo, Solano County, 6 Apr 1975 (J. C. Lovio *fide* R. L. C. Leong). Nesting, upper Napa Valley, Napa County, by mid-1970s (W. T. Grummer). One hundred thirty-eight confirmations, Marin County, 1976–1982 (Shuford 1993). Confirmed in 86 atlas blocks, Sonoma County, 1986–1991, (Burridge 1995). Confirmed in 90 atlas blocks, Contra Costa County, 1998–2002 (S. A. Glover pers. comm.).

Cedar Waxwing (*Bombycilla cedrorum*). Grinnell and Miller (1944) considered this species a sparse resident in the humid coast belt south to Eureka. Small (1994) described essentially the same breeding range but noted rare extralimital breeding, including one instance in Orange County (Pugh 1966). Since 1984, Cedar Waxwings have nested at least once in five of the Bay area counties and twice in San Mateo County. These sporadic nestings have occurred both within the coast belt and in urban areas. Records: Feeding a young cowbird, Berkeley, Alameda County, 18 Jul 1971 (AB 25:904, 1971). On nest, Linda Falls, Angwin, Napa County, summer 1973 (Berner et al. 2003). Carrying nest material, Half Moon Bay, San Mateo County, mid-June 1984 (B. Sauppe *fide* P. J. Metropulos). Adult with fledgling, suburban park in Concord, Contra Costa County, 4 Jun 2002 (NAB 56:484, 2002). Adults feeding begging fledglings in Palo Alto, Santa Clara County, 16 Jun 2002 (NAB 56:484, 2002).

Nashville Warbler (*Vermivora ruficapilla*). Historically, the southern edge of the Nashville Warbler's breeding range in the inner coast ranges was Mt. Sanhedrin, Mendocino County (Grinnell and Miller 1944). More recently, breeding has been noted on Crockett Peak, Lake County, and San Benito Mountain, San Benito County (Johnson and Cicero 1985). The single record for the Bay area is slightly beyond the historical range. Record: Feeding young, Little Sulphur Creek, Sonoma County, 23 Jun 1993 (Burridge 1995).

Northern Parula (*Parula americana*). The western edge of this eastern warbler's primary breeding range extends from northern Minnesota south to the Texas coast (Moldenhauer and Regelski 1996). Nesting was first discovered in California in 1952 (Williams et al. 1958), and has recurred sporadically in coastal counties from Monterey to Humboldt since that time. These records represent misoriented spring migrants that found suitable places to nest 2200 km from the western edge of their normal range. Attempts at breeding have occurred at least four times in Marin County and twice in San Mateo County. Records: On nest, Five Brooks Pond, Marin County, 17 Jun 1977 (Shuford 1993). Nested, Gazos Creek, San Mateo County, 28 May–2 Jul 1991 (AB 45:1159, 1991).

Hermit Warbler (*Dendroica occidentalis*). Grinnell and Wythe (1927) considered the Hermit Warbler an irregular migrant in the Bay region and listed fewer than ten records, most in the spring. Just south of the Bay area, Leslie Hawkins found a pair of nesting Hermit Warblers on Ben Lomond Mountain, Santa Cruz County, on 22 Jun 1930 (field notes *fide* D. L. Suddjian). McLean (1936) collected an adult male north of La Honda, San Mateo County, on 10 Jun 1933 and believed that this bird was nesting. Nesting in the Bay area was not proven, however, until 1954. Subsequently it has been confirmed in five Bay area counties. The distribution of breeding Hermit Warblers in the Santa Cruz Mountains is patchy. Within their preferred habitats they can be locally fairly common, but they are absent from other areas. Although logging may have reduced this species' numbers in the early 20th century,

Hermit Warblers have likely been nesting in the Santa Cruz Mountains throughout the historical period (D. L. Suddjian pers. comm.). Records: On nest, Castle Rock State Park, Santa Clara/Santa Cruz County line, 30 May 1954 (AFN 8:327, 1954). Feeding young, Mt. Tamalpais, Marin County, 7 Jul 1981 (AB 35:976, 1981). One confirmation, Sonoma County, 1986–1991 (Burridge 1995). Feeding young, San Mateo County, 16 Jun 1987 (Sequoia Audubon Society 2001). Fledged young, R. L. Stevenson State Park, Napa County, 11 Jul 1998 (C. Toews *fide* W. T. Grummer, Berner et al. 2003).

American Redstart (*Setophaga ruticilla*). The southwestern edge of the American Redstart's wide breeding range extends from southern British Columbia through northeastern Washington to northeastern Wyoming, although there is occasional nesting in south-central Oregon (Sherry and Holmes 1997). In California, the first nesting was recorded north of Arcata, Humboldt County, on 22 Jul 1972, 210 km southwest of the nearest known nest site in Oregon (Binford and Stallcup 1972). Subsequently this species has nested sporadically along California's northwest coast, but there does not appear to be a local population (NAB 55:353, 2001). American Redstarts nested in Marin and San Mateo counties in 1997, but there have been no subsequent records. Records: Fledged young cowbirds, Phipps Ranch, San Mateo County, 16 Jul 1997 (NASFN 51:1050, 1997). Fledged young redstarts, Stinson Beach, Marin County, 27 Jul 1997 (NASFN 51:1050, 1997).

Hooded Warbler (*Wilsonia citrina*). The Hooded Warbler breeds in the southeastern United States. The western edge of its range extends to eastern Oklahoma and eastern Texas, about 2300 km from the Bay area. In occasional flight years misoriented southeastern warblers, such as the Northern Parula, Kentucky (*Oporornis formosus*), and Hooded, reach California in unusual numbers in spring (Patten and Marantz 1996). The first breeding of the Hooded in California was recorded in the flight of1992, in Kern and Los Angeles counties (Small 1994). Record: Pair, female carrying food, Butano State Park, San Mateo County, 2 Jul 2005 (D. L. Suddjian).

Rose-breasted Grosbeak (*Pheucticus ludovicianus*). The western edge of this grosbeak's range extends from central and southeastern Alberta to the Dakotas. The species has nested twice in the San Francisco Bay area, about 1600 km southwest of its normal range. Records: Juvenile with adults, Gazos Creek, San Mateo County, 21 Jul 1983 (B. Sauppe *fide* P. J. Metropulos). Male fledged two young with female Black-headed Grosbeak, Tilden Park, Contra Costa County, 1992 (AB 46:1176, 1992).

Blue Grosbeak (*Passerina caerulea*). Grinnell and Wythe (1927) knew of only one record of the Blue Grosbeak in the Bay region, a bird seen on 1 May 1876 at Hayward, Alameda County. At the end of the 19th century, the Blue Grosbeak was a common summer resident in southern California and found regularly in the Central Valley as far north as Marysville (Grinnell 1902). East of California, Johnson (1994) reported a significant northward range expansion of this species from its Arizona and New Mexico population centers, starting in the 1960s. Since the first known nesting of this grosbeak in Alameda County in 1990 nesting has been recorded also in Sonoma and Santa Clara counties (Figure 6). Records: Nesting, east of Livermore, Alameda County, 9–30 Jun 1990 (AB 44:1183, 1990). Nest with young, Sears Point, Sonoma County, 24–29 Jul 1995 (NASFN 49:978, 1995). Fledged young, Llagas Creek, Santa Clara County, 2 Sep 1995 (NASFN 50:112, 1996). Breeding pairs, Liberty Island, Solano County, 2000 (NAB 54:421, 2000).

Indigo Bunting (*Passerina cyanea*). Until the 1940s or 1950s the Indigo Bunting was not found west of the continental divide, but subsequently it invaded the southwestern United States (Payne 1992, Johnson 1994). Numbers of singing territorial males have been increasing particularly in southern California (Small 1994). In the

Figure 6. Blue Grosbeak, Covington Park, Morongo Valley, San Bernardino County, 30 Apr 2002.

Photo by Peter LaTourrette

San Francisco Bay area nesting was first observed in Marin County in 1984 and subsequently has occurred at least once in four other counties. At least half of six reported nesting attempts, however, have been by mixed pairs, Indigo × Lazuli Bunting (*P. amoena*). Records: Nest with young, near Olema, Marin County, 12 Jul 1984 (Shuford 1993). Nest with eggs (hybrid pair), Colorado Creek, Santa Clara County, 1–12 Jun 1993 (AB 47:1148, 1993). Feeding young, near Pescadero, San Mateo County, 14–21 Aug 1994 (NASFN 49:99, 1995). Fledged young, near Goat Rock, Alameda County, 22 Jun–3 Jul 1995 (NASFN 49:978, 1995). Hybrid nesting, Piper Slough, Contra Costa County, 1998 (NASFN 52:501, 1998).

Great-tailed Grackle (*Quiscalus mexicanus*). In 1900 the northern limit of this grackle's range barely barely crossed the United States' southern boundary in southern Texas. Over the 20th century this range expanded far to the north (Johnson and Peer 2001). The Great-tailed Grackle was unknown in California prior to 1964, when it first reached the Colorado River and Imperial Valley (McCaskie and DeBenedictis 1966). Nesting was first recorded on the Colorado River in 1969, along the coast of southern California in 1988. An early harbinger of the grackle's colonization of the Bay area was a pair that attempted to nest in San Francisco in 1980 (AB 34:928, 1980). The colonization of the Bay area began more consistently in 1999 with irregular nesting in five counties since. Records: Failed nesting, San Francisco, San Francisco County, 20 Jun 1980 (AB 34:928, 1980). Two fledged young, Shadow Cliffs Regional Park, Alameda County, 24 Jun 1999 (NAB 53:431, 1999). Female building nest, McNabney Marsh, Contra Costa County, 8 Jun 2000 (NAB 54:421, 2000). Carrying food, Almaden Lake, Santa Clara County, 16 Jul 2000 (NAB

54:421, 2000). Nest with two fledged young, Rooster Run Golf Course, Sonoma County, Jul 2001 (NAB 55:481, 2001). Nest building, Fairfield, Solano County, 15 May 2004 (J. Walsh *fide* R. L. C. Leong).

Hooded Oriole (*Icterus cucullatus*). The Hooded Oriole was not listed by Grinnell and Wythe (1927). The first records of this species in the Bay area were from Oakland, Alameda County, and Reliez Valley, Contra Costa County, prior to May 1930 (Grinnell 1930) and San Jose, Santa Clara County, on 21 Jul 1930 (Pickwell 1932). Although a female and immature were observed in San Jose, Santa Clara County, in 1932 (Grinnell 1933), the first reported nest was in 1939 (Sibley 1952). Today, the Hooded Oriole nests in all of the Bay area counties, generally in fan palms (*Washingtonia* spp.) or by using palm fiber for nests in other trees. To a substantial extent this oriole's range expansion appears to have followed the planting of fan palms north of their historic range (Small 1994). Records: Nest with egg, San Leandro, Alameda County, 17 Jun 1939 (Sibley 1952). Nest with young, Larkspur, Marin County, 22 May 1941 (Shuford 1993). Nest building, San Jose, Santa Clara County, 24 Apr 1946 (Sibley 1952). Nesting activity, Lombardis, Napa County, 2 May 1948 (AFN 2:187, 1948). Nesting activity, Green Valley, Solano County, 19 May 1948 (AFN 2:187, 1948). Adults feeding fledgling, Burlingame, San Mateo County, 6 Jul 1956 (Gull 38:38, 1956). Nested, Sonoma, Sonoma County, 1977 (Burridge 1995). Nest with young, Seacliff area, San Francisco County, 16 May 1985 (A. S. Hopkins). Confirmed in 24 atlas blocks, Contra Costa County, 1998–2002 (S. A. Glover pers. comm.).

Red Crossbill (*Loxia curvirostra*). Grinnell and Wythe (1927) considered the Red Crossbill an irregular winter visitant, although they noted that in invasion years some birds were found in Berkeley and San Francisco through April. Crossbills apparently nested at Mt. Hermon in the Santa Cruz Mountains, south of the Bay region, in the summers of 1951 (AFN 5:303, 1951) and 1955 (AFN 9:402, 1955). The first breeding record for the Bay area was from Marin County in 1960 (Shuford 1993); irregular breeding has been recorded subsequently in San Francisco and San Mateo counties. Records: Gathering nest material, Inverness Ridge, Marin County, 23 Apr 1960 (Shuford 1993). Feeding young, Lincoln Park, San Francisco County, 9 Jun 1974 (AB 28:946, 1974). Fledged young, Gazos Creek Road, San Mateo County, July 1984 (B. Sauppe *fide* P. J. Metropulos).

DISCUSSION

Grinnell and Wythe wrote their summary of birds of the San Francisco Bay area near the end of an era that had seen enormous destruction of wildlife for commercial purposes as well as the destruction of wildlife habitats. The latter part of the 19th century and the first decades of the 20th century were marked by depredations of grebes, herons, shorebirds, and terns for use by the millinery trade. This trade was not stopped until 1918, with the final approval of the Lacey Act. Dawson (1923) judged that the numbers of these birds were at their lowest from 1900 to 1910. The era of market hunting had a similar effect on geese, ducks, and quail, and their numbers reached a low point between 1890 and 1910 (Grinnell et al. 1918). Coastal forests in Sonoma, Marin, San Mateo, and Santa Clara counties were harvested with the peak in timber cutting extending from about 1860 to 1890 (Jensen 1939, Stanger 1967). It is possible that Grinnell and Wythe (1927:150) reflected on this era when they wrote, "On the whole, it looks as though the total number of species in the Bay region at the present time were undergoing decided reduction, due in major part to the elimination of

habitats of wide diversity or of productive kinds. There is little doubt, too, that the aggregate number of individual birds, of all species together, is also becoming less, due to the expansion of closely built-up urban areas where practically no undomesticated bird-life of any sort can exist."

There are no means of comparison by which we can determine whether the aggregate number of birds has increased or decreased since 1927. As I have shown, however, there has been no decline in the number of breeding species in the Bay region but rather an increase. Undoubtedly, several factors contributed to these changes: (1) rebound of populations following cessation of commercial harvesting, (2) range expansions and contractions, (3) conversion of salt marshes to salt-evaporation ponds, (4) maturation of second-growth forests, (5) urban watering, (6) reservoir construction, and (7) habitat protection.

With the passage of the Lacey Act in 1918, milliners were prevented from importing or exporting aigrettes and grebe skins, and this finally ended the slaughter of many species for the millinery trade. The most striking result of the recovery of heron populations was for the Great and Snowy egrets. The first Great Egrets returning to the Bay area were seen in Suisun Bay in 1924 (Storer 1931), and by 1940 eggs had been collected at San Felipe Lake at the southern edge of the region (MVZ 7400) for the first nesting record in 50 years. The Snowy also rebounded, but at a slower pace. What is unclear, however, is how much of the resettlement of these egrets in the Bay area was caused by the displacement of birds from drained wetlands in the Central Valley, their original metropolis.

Although herons, grebes, shorebirds, and terns rebounded after the slaughter of the millinery trade ceased, few of the game species enjoyed a similar recovery following the end of market hunting. An exception is the Wood Duck, which now breeds throughout much of the Bay area. Lack of recovery of game-bird populations is probably a consequence of the urbanization Grinnell and Wythe feared and, for waterfowl, the loss of wetlands.

Numerous range expansions and contractions have been documented in the United States. For species in the western United States range expansions have been described (e.g., Johnson 1994, Laymon 1987, Bock and Lepthien 1976, Arnold 1980), as have contractions (e.g., Goldwasser et al. 1980, Laymon and Halterman 1987). Some studies have concluded that some changes were largely independent of human activities (Johnson 1994), whereas others have shown that the human influence has been a direct cause of the distribution changes (Laymon 1987, Goldwasser et al. 1980). Many of the category 1 species from Table 3 that now breed in the Bay area appear to be part of general range expansions, including the Gadwall, Common Merganser, Snowy Egret, Forster's Tern, Least Tern, Black Skimmer, Red-breasted Sapsucker, Pileated Woodpecker, Red-breasted Nuthatch, Northern Mockingbird, European Starling, Blue Grosbeak, Great-tailed Grackle, and Hooded Oriole.

The conversion of salt marshes to salt-evaporator ponds in San Francisco Bay was detrimental to the Clapper Rail (*Rallus longirostris*), the Alameda Song Sparrow (*Melospiza melodia pusilla*), and the Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*) but provided new habitat for many avian species. Salt production started in Alameda County in the 1850s on

small plots, apparently where natural salt ponds occurred within the salt marsh (Ver Planck 1958). Most of these first salt ponds were operated by local families. By the end of the 19th century most of the salt marsh in Alameda County had been converted, lesser amounts converted in San Mateo County. Salt marshes in Santa Clara County remained relatively intact until the 1930s, and most of the salt ponds in that county were constructed between 1930 and 1950. Avifaunal changes related to the increase in salt-pond acreage were noted as early as 1914 when Snowy Plovers were found nesting along the salt ponds' levees near Alvarado in Alameda County (Grinnell et al. 1918). The first colony of Caspian Terns (*Hydroprogne caspia*) in the San Francisco Bay area was recorded by 1922 (or possibly earlier), again on salt pond levees near Alvarado (DeGroot 1931, Grinnell and Miller 1944). Today, most nesting by California Gulls, Forster's Terns and Least Terns, all new breeding species, occurs on islands or levees within the salt ponds. Although California Gulls will sometimes forage on the salt ponds, they are more likely seen away from these ponds, particularly at active dumps. Forster's and Least terns use the salt ponds for foraging but are also found feeding in intertidal waters away from these ponds. Snowy Egrets use salt ponds for foraging throughout the year but are generalists and can be found in many other habitats. The Black Skimmer nests and forages within the mosaic of salt ponds.

After California became part of the United States much of the Bay area's forests were cut. Redwood was a particularly favored lumber, and early logging in San Mateo County had eliminated essentially all of the forests on the eastern side of the Santa Cruz Mountains by the 1860s (Stanger 1967). To the south, redwood and Douglas-fir forests were cut in the Los Gatos Creek watershed, and the mills were continually shifted to higher and steeper areas to get to the timber. Most of this forest was cut by the 1870s (Jensen 1939). On the west side of the mountains the lumber was taken out later, but only 8% of the original forest remained by the 1930s (Wilson 1937). Many of the areas logged over a century ago now have mature second-growth forests. James G. Cooper was the only ornithologist to survey this area during the period of extensive lumbering (Cooper 1870), and he made no mention of the Pileated Woodpecker or Red-breasted Nuthatch. It is likely that the Pileated Woodpecker, Red-breasted Nuthatch, Varied Thrush, and Red Crossbill have all benefited from the maturing of the second-growth forests.

The first settlers in the Bay area raised crops that could be grown following the winter rains or they irrigated through ditches from local creeks. Later, they used artesian wells to provide water for irrigation. As water became more plentiful, mesic plant communities sprouted within cities, and several birds were able to take advantage of these new habitats. The American Robin (*Turdus migratorius*), Northern Mockingbird, and Hooded Oriole moved into urban areas. Some of the original inhabitants, such as Bewick's Wren (*Thryomanes bewickii*), Spotted Towhee (*Pipilo maculatus*), and California Towhee (*P. crissalis*), adapted to the new habitats, but others, such as the Lazuli Bunting (*Passerina amoena*) and Chipping Sparrow (*Spizella passerina*), did not.

Water use as indicated by reservoir storage has increased in rough proportion to the increase in human population. In 1927 water storage was

about 250,000 acre-feet, where today it is in excess of 2,000,000 acre-feet (Britton et al. 1974). Most of this water has been used for household or industrial purposes, but a significant fraction has been used for miscellaneous purposes outside the home (Rantz 1972). The reservoirs themselves are used by numerous duck species in the winter, and it also appears that the various reservoirs have benefited Western (*Aechmophorus occidentalis*) and Clark's grebes, which breed in greater quantities today than in Grinnell and Wythe's time. Common Mergansers appear to have benefited from reservoirs also, although they do not nest on the reservoirs exclusively, as do the grebes, but nest nearby or upstream and move to the reservoirs soon after the young are hatched. Other piscivorous birds, including the Osprey (*Pandion haliaetus*) and Bald Eagle, have also benefited from the new reservoirs and are more common now than they were in the 1920s.

In 1927 there were few regional parks focused on land preservation as opposed to recreation. In their conclusions Grinnell and Wythe (1927:150) foresaw the need for a land ethic that would preserve the best and most valuable habitats: "Even though such changes in the direction of diminution are in large part inevitable, they can and should be compensated for insofar as is practicable by the establishment of parks and natural preserves here and there, such as Muir Woods, and by the spread of popular appreciation of bird-life as a community asset, so that general protection and encouragement of this asset for its esthetic and other values will become second-nature throughout our citizenry." The fourfold increase in population has, in fact, supported the protection of extensive regional parks through the Bay area in the 70 years since 1927. To some degree the resulting preservation has occurred only because of the size of the local population. A good argument can be made that there are a number of sensitive species in the Bay area that would not survive today without the habitat that has been preserved over the last 70 years. Although both salt marsh and riparian habitats have been destroyed or severely degraded over this period, enough habitat has been protected to support apparently viable populations of Black and Clapper rails in the remaining marshes and Yellow-breasted Chats (*Icteria virens*) in a few remaining healthy riparian areas. There is no question that today there is wide public support for conservation and wildlife protection throughout the Bay area. The same growing human population that so concerned Grinnell and Wythe in 1927 has also been the key for protection of our avifauna and remains so today.

The unhappy future projected by Grinnell and Wythe has not come to pass, at least not yet. Although we can be optimistic that our local avifauna has not been so soon destroyed, we must be concerned that our methods to assess the environmental health of the San Francisco Bay area are poor. The crude measure I have used, of the total number of breeding species, says nothing of the size or health of these populations. Suitable measures for the size and health of breeding bird populations were not employed in Grinnell and Wythe's day. Much of what is known now about breeding species in the Bay area has been obtained from the extensive volunteer efforts that have gone into the local county breeding bird atlases. There is, however, a need to build on this effort and move forward with long-term, quantitative approaches to monitor our wildlife populations.

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APPENDIX 1

The following county breeding records are not in Grinnell and Wythe (1927). Species marked with an asterisk were not noted as breeding in any of the nine San Francisco Bay area counties, while the remaining species represent additional counties for which there is breeding evidence not listed by Grinnell and Wythe. For each species, records are ordered by date.

Canada Goose (*Branta canadensis*)*. Four eggs collected, San Francisco, San Francisco County, 10 Jun 1915 (WFVZ 96369).

Wood Duck (*Aix sponsa*). On nest, Imrie Lake, Napa County, 1925 (E. L. Bickford's notes *fide* W. T. Grummer). [Grinnell and Wythe considered this species to have been extirpated in the Bay area but recorded previous nesting in Marin County in the 1870s.]

Mallard (*Anas platyrhynchos*). Eleven eggs collected, Ravenswood, San Mateo County, 30 Mar 1909 (WFVZ 96451).

Eared Grebe (*Podiceps nigricollis*)*. Seven eggs collected, Stanford University, Santa Clara County, 14 May 1908 (WFVZ 145157).

Clark's Grebe (*Aechmophorus clarkii*)*. Three eggs collected, Lake Merced, San Francisco County, 8 Jun 1885 (WFVZ 120839). [Grinnell and Wythe listed breeding records for the Western Grebe in the broad sense. A. M. Ingersoll, the collector, indicated the form was *clarkii* for this egg set.]

Brandt's Cormorant (*Phalacrocorax penicillatus*). Three eggs collected, New Years Point, San Mateo County, 18 Jun 1899 (WFVZ 81287).

Great Blue Heron (*Ardea herodias*). Four eggs collected, Novato, Marin County, 14 Mar 1896 (CAS 6693). Five eggs collected, near Brentwood, Contra Costa County, 21 Mar 1915 (WFVZ 34490). Five eggs collected, Forestville, Sonoma County, 10 Mar 1920 (WFVZ 48908). Eggs collected, Cut-off Slough, Solano County, 11 Apr 1920 (Condor 41:81–82).

Great Egret (*Ardea alba*)*. Two sets of eggs collected, Sargent, Santa Clara County, 4 Apr 1889 (CAS 6697 and 6699).

Green Heron (*Butorides virescens*). Six eggs collected, Napa, Napa County, 21 May 1900 (CAS 3291). Five eggs collected, Searsville Lake, San Mateo County, 28 May 1904 (WFVZ 94665). Five eggs collected, "Lagunita Lake, Palo Alto," Santa Clara County, 4 May 1908 (WFVZ 54420).

Black-crowned Night-Heron (*Nycticorax nycticorax*). Three eggs collected, near Santa Clara, Santa Clara County, 18 May 1899 (WFVZ 48922). Four eggs collected, Menlo Park, San Mateo County, 28 Apr 1901 (WFVZ 95724). Eggs collected, north end of Belvedere Island, Marin County, 22 Apr 1918 (Condor 41:81–82). On nest, Imrie Lake, Napa County, 15 Mar 1925 (E. L. Bickford's notes *fide* W. T. Grummer).

White-tailed Kite (*Elanus leucurus*). Four eggs collected, near Spring Valley, San Mateo County, 3 May 1901 (WFVZ 33184). Four eggs collected, Contra Costa County, 28 Mar 1915 (WFVZ 23191).

Bald Eagle (*Haliaeetus leucocephalus*). Two eggs collected, near Guerneville, Sonoma County, 24 Feb 1904 (WFVZ 98766).

Northern Harrier (*Circus cyaneus*). Five eggs collected, Redwood City, San Mateo County, 23 May 1892 (WFVZ 76390). Three eggs collected, salt marsh near Petaluma, Sonoma County, 31 May 1924 (WFVZ 45207).

Sharp-shinned Hawk (*Accipiter striatus*). Three eggs collected, Berryessa, Santa Clara County, 11 May 1893 (WFVZ 107440). Four eggs collected, Menlo Park, San Mateo County, 3 May 1903 (WFVZ 35187). Five eggs collected, Alpine Valley, Sonoma County, 4 Jun 1914 (WFVZ 10075).

Cooper's Hawk (*Accipiter cooperii*). Four eggs collected, San Mateo County, 2 May 1893 (WFVZ 98701). Eggs collected, 4 miles south of Gilroy, Santa Clara County, 27 May 1916 (MVZ 2701).

Red-shouldered Hawk (*Buteo lineatus*). Two eggs collected, near Menlo Park, San Mateo County, 2 Apr 1898 (WFVZ 80563). Eggs collected, Oakley, Contra Costa County, 18 Apr 1915 (MVZ 7646).

Swainson's Hawk (*Buteo swainsoni*). One egg collected, Petaluma, Sonoma County, before 11 Jun 1859 (USNM B01679). Two eggs collected, "Ferguson's Swamp," Santa Clara County, 30 Apr 1889 (WFVZ 98178).

Peregrine Falcon (*Falco peregrinus*). Eggs collected, Alameda County, 4 Apr 1896 (MVZ 7818).

Black Rail (*Laterallus jamaicensis*)*. Nested at Alviso, Santa Clara County, prior to 1904 (Wheelock 1916). Eggs collected, Newark, Alameda County, 10 Apr 1911 (WFVZ 99670, Kiff 1978).

Clapper Rail (*Rallus longirostris*). Eight eggs collected, Petaluma, Sonoma County, 28 Apr 1920 (WFVZ 102325)

Sora (*Porzana carolina*). Nine eggs collected, Santa Clara County, 1 May 1892 (CAS 10729).

Common Moorhen (*Gallinula chloropus*). Eight eggs collected, Santa Clara County, 28 Apr 1894 (WFVZ 163759).

American Avocet (*Recurvirostra americana*)*. One downy young collected, Alvarado, Alameda County, 11 May 1926 (MVZ 145184).

Western Gull (*Larus occidentalis*). Three eggs collected, Bodega Bay, Sonoma County, 20 May 1910 (WFVZ 44594).

Caspian Tern (*Hydroprogne caspia*). Colony near east end of Dumbarton Bridge, Alameda County, 1922 (Grinnell and Miller 1944).

Rock Pigeon (*Columba livia*)*. No early nestings recorded, because of the species' domestic origin (Shuford 1993). Vallejo (1890) reported that domesticated pigeons were common around the missions prior to California's becoming a state. Grinnell and Miller (1944) noted that they were common about California cities. An egg set

collected in Eureka, Humboldt County, 25 Nov 1907 (WFVZ 139081) is the earliest preserved from the state.

Band-tailed Pigeon (*Patagioenas fasciata*). Nesting on valley floor near San Jose, Santa Clara County, 1895 and 1898 (Atkinson 1899). Egg set from Sulphur Creek, Sonoma County, 16 May 1896 (WFVZ 46638).

Yellow-billed Cuckoo. Four eggs collected, Napa County, 15 May 1881 (WFVZ 4585).

Greater Roadrunner (*Geococcyx californianus*). Eggs collected, Eaton Gulch, Redwood City, San Mateo County, 29 May 1896 (WFVZ 47898). Eggs collected, Novato, Marin County, 21 Apr 1901 (MVZ 8697). Eggs collected, Mt. Diablo, Contra Costa County, 2 May 1904 (CAS 4738).

Burrowing Owl (*Athene cunicularia*). Four eggs collected, Sonoma County, 15 May 1891 (CAS 2763). Eight eggs collected, Sweany Ranch, Redwood City, San Mateo County, 13 Jun 1898 (WFVZ 89859). Historically present, Marin County, before 1900 (Mailliard 1900). Five eggs, Benicia store house 29, Solano County, 7 Apr 1919 (Emerson Stoner's notes *fide* R. L. C. Leong).

Long-eared Owl (*Asio otus*). Four eggs collected, Sonoma County, 4 Apr 1881 (CAS 2741). Eggs collected, Berryessa, Santa Clara County, 6 Apr 1896 (MVZ 5968).

Lesser Nighthawk (*Chordeiles acutipennis*)*. Eggs collected on Uvas and Coyote creeks, Santa Clara County, 1894 to 1937 (Unglish 1929, WFVZ 30991).

Common Poorwill (*Phalaenoptilus nuttallii*). Nest with eggs, San Carlos, San Mateo County, 15 Jul 1885 (Dixon 1923). Two eggs collected, San Geronimo, Marin County, 22 Jul 1908 (CAS 7366). Eggs collected, Alpine Valley, Sonoma County, 31 May 1920 (WFVZ 100453). Set of eggs taken along Uvas Creek, Santa Clara County, 14 Apr 1926 (Unglish 1929).

White-throated Swift (*Aeronautes saxatalis*). Nesting in Leona quarries in Oakland, Alameda County, 21 Aug 1927 (Kelly 1927).

Black-chinned Hummingbird (*Archilochus alexandri*)*. Three egg sets collected west of Gilroy, Santa Clara County, May 1907 (Unglish 1932).

Western Wood-Pewee (*Contopus sordidulus*). Two eggs collected, Fair Oaks, San Mateo County, 4 Jun 1893 (WFVZ 75475).

Willow Flycatcher (*Empidonax traillii*). Four eggs collected, San Francisquito Creek, San Mateo County, 23 Jun 1895 (WFVZ 75063).

Horned Lark (*Eremophila alpestris*). Three eggs collected, 0.5 mi. E of Redwood City, San Mateo County, 27 Apr 1898 (WFVZ 74305). Two eggs collected, Antioch, Contra Costa County, 7 May 1915 (WFVZ 102704). Nest with eggs, east of Benicia Arsenal, Solano County, 11 May 1925 (Emerson Stoner's notes *fide* R. L. C. Leong).

Purple Martin (*Progne subis*)*. Two eggs collected, Napa, Napa County, before 14 Oct 1859 (USNM B02069).

Tree Swallow (*Tachycineta bicolor*). Eggs in nest box, Napa, Napa County, 1916 [E. L. Bickford; Gull 1(3)].

Violet-green Swallow (*Tachycineta thalassina*)*. Four eggs collected, Santa Rosa, Sonoma County, 25 May 1893 (CAS 8553). Eggs collected, Redwood City, San Mateo County, 3 Jun 1900 (WFVZ 91979). Eggs collected, San Anselmo, Marin County, 8 May 1904 (WFVZ 117333). Eggs collected, Coyote, Santa Clara County, 2 Jun 1926 (MVZ 6236).

Northern Rough-winged Swallow (*Stelgidopteryx serripennis*). Five eggs collected, Harrison, San Mateo County, 17 Jun 1899 (WFVZ 101936). Five eggs collected, Santa Rosa Laguna, Sonoma County, 25 Jun 1920 (WFVZ 101937).

White-breasted Nuthatch (*Sitta carolinensis*). Five eggs collected, Redwood City, San Mateo County, 17 Apr 1919 (WFVZ 94904).

Pygmy Nuthatch (*Sitta pygmaea*). Six eggs collected, Pescadero, San Mateo County, 19 May 1901 (WFVZ 90190).

Brown Creeper (*Certhia americana*). Eggs collected, Stanford University, Santa Clara County, 17 May 1914 (MVZ 2975).

Rock Wren (*Salpinctes obsoletus*). Six eggs collected, Hawes Ranch, Redwood City, San Mateo County, 28 May 1899 (WFVZ 90469). Six eggs collected, Rincon Valley, Sonoma County, 26 Apr 1913 (WFVZ 101001).

American Dipper (*Cinclus mexicanus*). Three eggs collected, Alameda Canyon, Alameda County, 9 May 1905 (CAS 10145). On nest, Lower Chiles Valley Road, Napa County, summer 1910 (E. L. Bickford's notes *fide* W. T. Grummer).

Western Bluebird (*Sialia mexicana*). Four eggs collected, 1.5 mi. W of Redwood City, San Mateo County, 19 Apr 1896 (WFVZ 105844).

Hermit Thrush (*Catharus guttatus*). Four eggs collected, Saratoga, Santa Clara County, 20 May 1884 (WFVZ 104194).

American Robin (*Turdus migratorius*). On nest, Los Gatos, Santa Clara County, 1893 (Nidiologist 1:95). On nest, Napa, Napa County, summer 1914 (E. L. Bickford's notes *fide* W. T. Grummer). Mt. Olivet Cemetery, San Mateo County, 15 Jul 1917 (Condor 19:185).

Yellow-rumped Warbler (*Dendroica coronata*)*. Howell Mountain, Napa County, prior to 1927 (Clark 1927).

Black-throated Gray Warbler (*Dendroica nigrescens*)*. Four eggs collected, Rincon Valley, Sonoma County, 23 May 1923 (WFVZ 108790). Howell Mountain, Napa County, prior to 1927 (Clark 1927).

MacGillivray's Warbler (*Oporornis tolmiei*). Five eggs collected, Danville, Contra Costa County, 2 May 1897 (CAS 8718). Three eggs collected, Summit Springs, San Mateo County, 2 Jul 1899 (WFVZ 93850). On nest, Lokoya Redwoods, Mt. Veeder Road, Napa County, summer 1921 (E. L. Bickford's notes *fide* W. T. Grummer).

Yellow-breasted Chat (*Icteria virens*). Five eggs collected, San Francisco, San Francisco County, 2 May 1882 (WFVZ 130211).

Western Tanager (*Piranga ludoviciana*). Nesting, Napa, Napa County, since 1917 (E. L. Bickford notes *fide* W. T. Grummer).

Chipping Sparrow (*Spizella passerina*). Four eggs collected, Redwood City, San Mateo County, 7 May 1895 (WFVZ 84996). Eggs collected, Danville, Contra Costa County, 6 May 1898 (MVZ 3339). Used nest, Golden Gate Park, San Francisco County, 1920 [Gull 3(2), 1921].

Lark Sparrow (*Chondestes grammacus*). Three eggs collected, near San Carlos, San Mateo County, 20 May 1884 (WFVZ 77048).

Sage Sparrow (*Amphispiza belli*). Four eggs collected, Redwood City, San Mateo County, 1 May 1910 (WFVZ 77118).

Grasshopper Sparrow (*Ammodramus savannarum*). Four eggs collected, Phelps Hill, Redwood City, San Mateo County, 7 Jun 1896 (WFVZ 77029). Five eggs collected, Rincon Valley, Sonoma County, 30 Jun 1911 (WFVZ 104999).

Tricolored Blackbird (*Agelaius tricolor*). Eggs collected, 2.5 mi. from Santa Rosa, Sonoma County, 23 May 1906 (WFVZ 111190).

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*). Eggs collected, Pinole, Contra Costa County, 28 May 1899 (MVZ 3329).

Lawrence's Goldfinch (*Carduelis lawrencei*). Four eggs collected, Pinole, Contra Costa County, 21 May 1900 (WFVZ 119258). Four eggs collected, San Francisco, San Francisco County, 23 May 1915 (WFVZ 94053). Five eggs collected, Rincon Valley, Sonoma County, 20 May 1917 (WFVZ 112103).

American Goldfinch (*Carduelis tristis*). Eggs collected, Hercules, Contra Costa County, 30 May 1902 (MVZ 3333).

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NOTES

A ROSS'S GULL REACHES SOUTHERN CALIFORNIA

GUY McCASKIE, 954 Grove Ave., Imperial Beach, California 91932; guymcc@pacbell.net

I spent the morning of Friday 17 November 2006 birding in the Imperial Valley of Imperial County, California, my only notable sightings being a wintering Solitary Sandpiper (*Tringa solitaria*) 5.5 km west of Seeley and a White-throated Sparrow (*Zonotrichia albicollis*) frequenting a feeder near the southeast corner of El Centro. In the afternoon I birded eastward along the south shore of the Salton Sea from the vicinity of the New River mouth, seeing the expected number and variety of waterbirds. The weather was clear and calm, with the temperature approaching 80° F in the afternoon. At about 1500 hr I arrived at the boat-launch ramp at the southwest corner of Red Hill and drove to the hill's westernmost point for optimal viewing of the gulls loafing along the west shore. As I cautiously drove west on the north dike to the boat-launch channel, my attention was drawn to a small white gull on the water about 50 feet to my right. My initial reaction was that the gull was a Ross's Gull (*Rhodostethia rosea*), but at the same time knew that I was at the south end of the Salton Sea so must be mistaken. However, upon more careful study with binoculars, I was unable to make this bird into an aberrant Bonaparte's Gull (*Larus philadelphia*) or an odd looking Little Gull (*L. minutus*)—it was indeed an adult Ross's Gull in basic plumage. At this time the gull flew a short distance to the shore about 100 feet to the northeast of me and began actively picking insects from the surface of the wet mud.

Being alone without a camera, and knowing that Ross's Gull was unrecorded in California, I was eager to obtain confirmation and documentation. I fumbled with a list of cell-phone numbers and finally calmed down enough to alert some southern California birders, including Bob Miller in Brawley and Kenneth Z. Kurland near El Centro, both photographers. I then spent one of the longest half-hours of my life nervously watching the gull while awaiting the arrival of Bob Miller with his camera. Fortunately, the gull appeared interested only in consuming insects picked from the surface of the mud, so when alarmed by approaching Ring-billed Gulls (*L. delawarensis*) it flew only very short distances and never got more than 200 feet from me. Miller arrived at about 1530 hr and quickly obtained recognizable digiscoped images. I was now able to relax and enjoy my find. Kenneth Z. Kurland arrived about an hour later, and the three of us witnessed a great sunset while enjoying this fabled gull from the far north.

News of the Ross's Gull spread quickly, and birders from as far away as central California and Arizona were at Red Hill before dawn on 18 November. To everyone's relief, the gull was still present, remaining through the day and delighting photographers. On Sunday 19 November 2006 the gull was still present at dawn, but, to the disappointment of the many arriving after sunrise, it was last seen flying east toward the rising sun.

This Ross's Gull appeared to be about the size of a Bonaparte's Gull or smaller but with exceptionally long wings and whiter plumage (Figure 1). The small rounded head was mostly white but had some pale blue-gray on the crown. In addition there was a short dark blackish line at the rear of the auriculars that appeared to be a remnant of the collar present in summer. The eyes were dark and appeared large in part because of dark feathering immediately above, below, and in front of each eye. The short bill was entirely black, with white feathering extending from the forehead over the base.

Figure 1. Adult Ross's Gull at Red Hill, south end of the Salton Sea, Imperial County, California, 18 November 2006.

Photo by Kenneth Z. Kurland

The mantle was pale blue-gray, with this color extending up the rear of the neck to the nape and out onto the sides of the breast; the longest tertials showed white tips. The long primaries were a slightly darker blue-gray than the mantle, with the narrow outer web on the outermost primary black. The long wedge-shaped tail, with the central rectrices noticeably long, was entirely white. The underparts were white with a noticeable pink wash, the pink being brightest on the belly (see cover photo). The legs and feet were dark red.

The bird was extremely graceful in flight, with long unmarked wings and a strongly wedge-shaped tail. The uppersides of the wings were pale blue-gray with white tips on the secondaries and inner primaries forming a white trailing edge and the narrow black outer web on the outer primary visible (Figure 2). The undersides of the wings were noticeably dark though not as dark as those on an adult Little Gull.

The Ross's Gull breeds in marshy tundra in northeastern Siberia, with occasional isolated nesting in northern Greenland (Cramp 1983) and in Canada on the Cheyne Islands, Nunavut, and around Churchill, Manitoba (Godfrey 1986). The birds disperse north after nesting, moving west and east along the coast and pack ice in the Arctic Ocean; large numbers pass Point Barrow at the northern tip of Alaska in October. The winter range is unconfirmed but believed to be around ice in the Beaufort, Bering, and Okhotsk seas (Olsen and Larsson 2004).

Small numbers are found annually in northern Europe, with vagrants recorded south to Fuenterrabia and Zumaia on the north coast of Spain (adults photographed on 10 April 1994 and 17–18 April 1994, *Ardeola* 43:113, 1996), Lake Ohrid in Macedonia (adult photographed 23–24 April 2001, *Birding World* 14:240, 2001 and 15:25, 2002), and as far south as Cagliari Bay at the south end of Sardinia, Italy (January 1906, *Ibis* 9:394, 1906). On the Pacific coast of Asia, Ross's Gulls have

Figure 2. Adult Ross's Gull in flight at Red Hill, 18 November 2006.

Photo by Larry Sansone

been found south to Hokkaido, with two at Towada-ko in Aomori prefecture at the north end of Honshu, Japan (Brazil 1991), and one even farther south at Sotobai in the Gulf of Po Hai, Manchuria, China (Dement'ev and Gladkov 1951, Meyer de Schauensee 1984).

The first Ross's Gull to be found in temperate North America was a first-winter bird at Clover Point in Victoria, British Columbia, 27 October–9 November 1966 (Campbell et al. 1990), followed by a highly publicized adult at Newburyport, Massachusetts, 12 January–9 May 1975 (Veit and Petersen 1993). Since that time an average of about one a year has been found in the United States south of Canada, with the southernmost, from east to west, being at the Indian River inlet in southeastern Delaware (adult photographed 16–30 November 1996, *Field Notes* [*FN*] 51:31, 1997), Indianapolis, Indiana (adult photographed 4–10 November 1995, *FN* 50:63, 1996), Riverlands Environmental Demonstration Area near St. Louis, Missouri (adult photographed 31 December 1991–11 January 1992, *American Birds* [*AB*] 46:272 and 331,1992), Sutherland Reservoir in central southern Nebraska (adult photographed 17–27 December 1992, *AB* 47:273 and 318, 1993), Julesburg Reservoir in northeastern Colorado (first-year bird photographed 28 April–7 May 1983, *AB* 37:896, 1983), and American Falls Reservoir in central southern Idaho (adult photographed 21–27 January 1998, *FN* 52:228, 1998).

In the Pacific states and provinces, the occurrence at Victoria in 1966 remains the sole record for British Columbia. An adult was photographed at McNary Dam on the Columbia River in southeastern Washington/northeastern Oregon 27 November–1 December 1994 (Wahl et al. 2005, Marshall et al. 2003), and an adult was on Yaquina Bay on the central coast of Oregon 18 February–2 March 1987

(Marshall et al. 2003).

The southernmost Ross's Gulls in Asia, Europe, and North America appear to have been the single birds in China (approx. 40° N), Italy (approx. 39° N), Missouri (38° 52′ N) and Delaware (38° 30′ N). The adult at the south end of the Salton Sea was at 33° 11.8′ N, thus substantially farther south than any previous record.

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THE BRANDT'S CORMORANT IN ALASKA

STEVEN C. HEINL, P. O. Box 23101, Ketchikan, Alaska 99901; steve_heinl@fishgame.state.ak.us

ANDREW W. PISTON, P. O. Box 1116, Ward Cove, Alaska 99928

The Brandt's Cormorant (*Phalacrocorax penicillatus*) breeds along the Pacific coast of North America from Baja California north to south-coastal Alaska (AOU 1998, Wallace and Wallace 1998). In Alaska, it is a rare, local breeder, with nesting documented at only a few locations (Wallace and Wallace 1998). The nearest nesting locations south of Alaska are located on the west coast of Vancouver Island, British Columbia (Campbell et al. 1990). Although this species has been presumed to winter along the southern coast of Alaska (AOU 1983, AOU 1998, Wallace and Wallace 1998), there have been no formally published mid-winter records for the state. Furthermore, it has been nearly 30 years since this species' status in Alaska has been summarized (Kessel and Gibson 1978). Here we present new information on the regular winter occurrence of the Brandt's Cormorant in the Ketchikan area of southeast Alaska, and we provide a review of its historical occurrence in the state based on published information, including regional reports in *American Birds* (AB), unpublished information obtained from other observers, and unpublished data archived at the University of Alaska Museum (UAM), Fairbanks.

The city of Ketchikan is located on Revillagigedo Island, one of the southernmost islands of the Alexander Archipelago in southeast Alaska (Figure 1). On the basis of

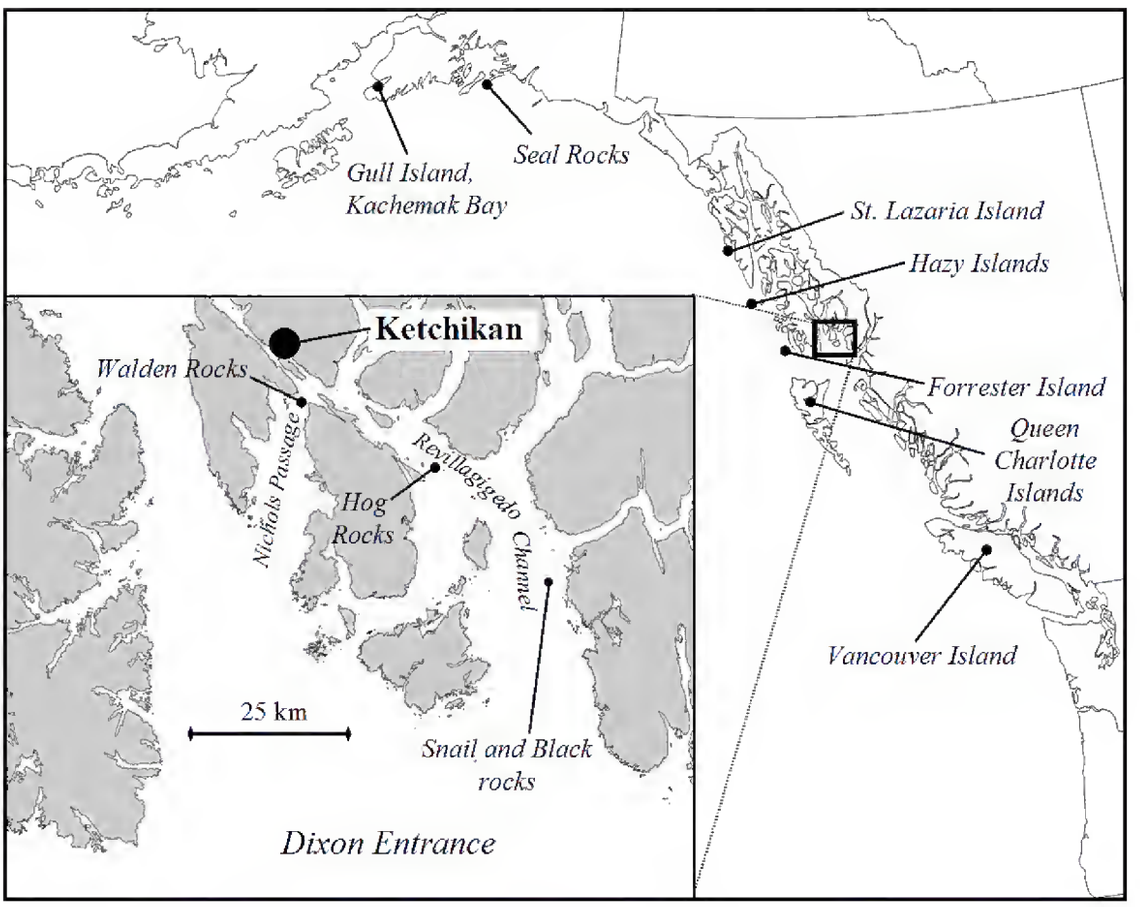

Figure 1. Coastal Alaska and British Columbia, showing the Ketchikan area, Alaska (inset), and locations mentioned in the text.

our personal observations from 1990 to 2005, we consider the Brandt's Cormorant to be an uncommon winter visitant in the Ketchikan area, and we have found it annually in small numbers from November (earliest, 2 November 2002) through April (latest, 2 May 2004 and 20 May 2006). It occurs primarily in the exposed waters of Revillagigedo Channel and Nichols Passage, just south of Ketchikan. These waters are accessible only by boat and had seldom been visited by ornithologists or birders. A Brandt's Cormorant in Revillagigedo Channel on 16 November 1980 was the first one recorded in the Ketchikan area (AB 35:214, 1981). We have found at least one bird on nearly all of our visits to these areas (more than 30 records), and we collected one specimen in Nichols Passage on 31 January 1998 (UAM 7857, immature male, S. C. Heinl and J. T. Hunt). Our largest counts have been 15 in a roosting flock of >200 cormorants at Hog Rocks, Revillagigedo Channel, on 11 February 2000 (S. C. Heinl, J. T. Hunt, A. W. Piston, R. L. Scher, D. W. Sonneborn); 15 at Snail and Black rocks, Revillagigedo Channel, on 21 April 2006 (Figure 2); 5 near Walden Rocks, Nichols Passage, on 8 March 1997; and 5 at Ketchikan on 4 February 2001. Our observations have included both immatures and adults. Many of the adults are in alternate plumage by February, with large patches of white filoplumes on the sides of the neck and on the scapulars. Except for a few nonbreeding stragglers, cormorants of all species leave the Ketchikan area during the breeding season.

In contrast to our data from the Ketchikan area, nearly all other Alaska records of the Brandt's Cormorant come from isolated offshore islands, some of which support breeding colonies of seabirds. In addition, nearly all other records of this species come from the breeding season, when a majority of the visits to offshore sites have taken place. The first Alaska record was of a specimen collected by George Willett at Forrester Island, off the southernmost coast of southeast Alaska, on 2 June 1917 (Willett 1918). Although Willett spent entire breeding seasons at Forrester Island, from 1914 to 1917 and in 1920, and a small part of 1919 (Willett 1915, 1917, 1918, 1920), this specimen was the only Brandt's Cormorant he observed, and he considered it a straggler (Willett 1923). Malcolm E. Isleib (in litt.) observed 20 Brandt's Cormorants and collected the second Alaska specimen (UAM 6149, adult male) at Lowrie Island, near Forrester Island, on 14 September 1992.

Thirteen Brandt's Cormorants and four nests at Seal Rocks, Hinchinbrook Entrance, Prince William Sound, on 22 July 1972 provided the first nesting record for Alaska (Isleib and Kessel 1973). The Seal Rocks site apparently supported only a minor colony of breeding birds (primarily Black-legged Kittiwakes, *Rissa tridactyla*) and was not habitable by cormorants prior to uplift by the 1964 Alaska earthquake (Isleib and Kessel 1973). Small numbers of Brandt's Cormorants were found during the breeding season at Seal Rocks as late as 1978 (maximum, 21 birds; Kessel and Gibson 1978), but they apparently abandoned it sometime thereafter (Hatch 1993). Isleib also found one Brandt's Cormorant at Fish Island, in the Wooded Islands, about 38 km southwest of Seal Rocks on 16 August 1973 (Kessel and Gibson 1978).

Although no longer known to nest at Seal Rocks, the species apparently still occurs at least sporadically in the Gulf of Alaska region. An adult was observed at the seabird colony at Gull Island, Kachemak Bay, lower Cook Inlet, on 21 June 1987, but none were found there subsequently (AB 41:1475, 1987); this is the westernmost Alaska record. In 2000, Alan DeMartini (in litt.) made two observations of adult Brandt's Cormorants in the Gulf of Alaska: one off the coast of Cape Fairweather (approximately 500 km southeast of Hinchinbrook Entrance) on 21 June 2000, and one to three near Hinchinbrook Entrance 22–24 June 2000.

Nesting Brandt's Cormorants were discovered in southeast Alaska at St. Lazaria Island, near Sitka, on 13 June 1984 (J. D. Webster; 20 nests and 130 birds; Nelson et al. 1987). Webster found three birds at St. Lazaria on 19 June 1985 (UAM, unpubl. data), but this species has not been found there subsequently, despite the fact that the U. S. Fish and Wildlife Service (USFWS) has maintained an annual research camp

on the island since 1994 (L. Slater pers. comm.). Finally, USFWS biologists found nesting Brandt's Cormorants at the Hazy Islands, off the coast of southern southeast Alaska, on 25 June 1982 (23 pairs; Nelson et al. 1987) and 18 July 2000 (57 adults and 40 nests; L. Slater pers. comm.). Those dates represent the only visits to the Hazy Islands by the USFWS. Up to 50 Brandt's Cormorants have been seen on the one grassy island in the Hazy Islands on several occasions from the mid-1990s to 2000 and annually in late June and early July 2001–2005 (J. King and W. P. Taylor in litt.). Those observations were peripheral to the Alaska Department of Fish and Game's studies of Steller's Sea Lion (*Eumetopias jubatus*), and accurate counts of the number of birds and nests were not made.

Our records show that the Brandt's Cormorant is clearly a regular winter visitant in small numbers to the Ketchikan area, extending the known winter range of this species north to the southernmost waters of southeast Alaska. In addition, our observations provide Alaska's only winter records, and we found no evidence to suggest that this species winters north to Prince William Sound (contra AOU 1983, AOU 1998, Wallace and Wallace 1998). The Brandt's Cormorant is an uncommon winter visitant and rare spring and fall visitant to the nearby northern Queen Charlotte Islands of British Columbia, where it has been found at Langara and Graham islands (P. Hamel in litt.). High counts there include 50 in Masset Inlet on 14 April 1935 (Campbell et al. 1990), 28 near Masset on 18 December 1982, and 21 in Skidegate Inlet on 26 July 1997 (P. Hamel in litt.). Small numbers were also recorded in 19 of the 25 most recent years on the Masset Christmas Bird Count. Thus the Brandt's Cormorant has probably been a regular winter visitant to the Dixon Entrance area for some time.

Figure 2. Seven Brandt's Cormorants (*Phalacrocorax penicillatus*) and seven Pelagic Cormorants (*P. pelagicus*) at Black Rock, Revillagigedo Channel, in southeast Alaska, 21 April 2006.

Photo by S. C. Heinl

(Dixon Entrance is the large body of open water that separates the islands of southeast Alaska from the islands of coastal British Columbia; Figure 1.) We have not visited the Dixon Entrance area during the winter, but, on the basis of our records and the records from the north shore of the Queen Charlottes, the Brandt's Cormorant is also present on the Alaska (northern) side during the winter. It is not known whether the adult birds that winter in the Ketchikan area breed elsewhere in Alaska or, perhaps just as likely, migrate to breeding colonies somewhere south of Alaska.

We thank Leslie Slater and David Irons (USFWS), Jamie King and William Taylor (Alaska Department of Fish and Game), and Al DeMartini for sharing information and unpublished observations of Brandt's Cormorants in Alaska. We thank Daniel D. Gibson (University of Alaska Museum) for sharing specimen data and unpublished information, Peter Hamel for providing information regarding the status of the Brandt's Cormorant in the Queen Charlotte Islands, and, in particular, Tom Hunt, for the many opportunities he provided to search for cormorants by boat. We thank Daniel D. Gibson, Leslie Slater, Douglas Causey, and Robert H. Day for their reviews of our manuscript.

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FIRST RECORD OF A NORTHERN LAPWING IN ALASKA AND WESTERN NORTH AMERICA

MICHAEL T. SCHWITTERS, U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services, 9001 E. Frontage Road, Suite A, Palmer, Alaska 99645; schwit@3rivers.net

The Northern Lapwing (*Vanellus vanellus*) is a common Old World plover that breeds and winters throughout much of Europe. In Asia it breeds south of the tundra regions in a broad band from north of the Caspian Sea east to Mongolia and China. In Russia it breeds generally south of 57° N to the southern trans-Baikal region, the Amur valley, locally in the Pacific region in Ussuriland (Vaurie 1965). It breeds also on Honshu, Japan (Brazil 1991). Eastern Asian populations withdraw south to winter mainly in southern China and north to southern Japan (Vaurie 1965). The birds generally depart their easternmost breeding areas in Russia (Ussuriland) in September (Dement'ev 1969); wintering birds in Japan arrive from late August to October (Brazil 1991).

On 12 October 2006 I found and collected a Northern Lapwing on the island of Shemya at the western end of Alaska's Aleutian Islands (52° 43′ N, 174° 07′ E). The specimen provides the first documented record of the species in Alaska and within western North America.

Shemya Island is the home of the United States Air Force's (USAF) Eareckson Air Station and is also part of the Alaska Maritime National Wildlife Refuge. I was on the island as part of a study associated with the bird–aircraft strike hazard (BASH) at the air force installation; corollary tasks included basic wildlife inventory for the refuge, scientific collection for the University of Alaska Museum, and avian influenza surveillance as part of a Department of Agriculture program. I began this BASH work in the summer of 1999 and have been on the island during spring and fall migration (approximately two months each season) through five subsequent years. The fieldwork requires intensive daily travel on the island's road system. Collection of bird specimens on the island has been under the permits and guidance of the University of Alaska Museum with the cooperation of the USAF 611th Air Support Group.

On 12 October 2006 I was checking a small wetland along the island's south beach road. As I crested a berm separating the wetland from the road a bird flushed at about 60 meters. As it became airborne it uttered a sharp call. The bird's pigeonlike size, dark plumage, large paddle-shaped wings, and crest identified it unmistakably as a Northern Lapwing. I had previously observed the species in Europe and Asia (Mongolia). The lapwing flew about 200 meters to the west and landed in deep beach grasses adjacent to the island's sewage-treatment pond. I stalked the bird and collected it as it flushed and flew past me in high winds at a range of about 40 meters.

The Northern Lapwing has a long history of casual occurrences in eastern North America. It has occurred from Baffin Island, Labrador, and Newfoundland south through southern Quebec, New Brunswick, Prince Edward Island, Nova Scotia, and New England to New York (AOU 1998:142). Elsewhere in eastern North America it has occurred accidentally as far south as the Caribbean (Puerto Rico and Barbados) and inland as far as Ohio (AOU 1998).

The tendency of Northern Lapwings to move from Europe to the New World is illustrated by invasions in 1927 and 1966, probably in response to unusual weather patterns. The 1927 event (which extended into 1928) was focused on Newfoundland, but unusual numbers were noted in the other Canadian maritime provinces as well. Estimates of the number of birds involved were in the hundreds, perhaps in the thousands (Ingersoll 1928). In 1966, records totaling 32 individuals came from Atlantic Canada (Tufts 1968).

NOTES

In western North America, the only historical reference from Alaska is based on an undocumented hearsay report (Dall and Bannister 1869, Gabrielson and Lincoln 1959). Thus, this Shemya specimen is the basis for the first documented record of the Northern Lapwing for Alaska and all of western North America. It is archived at the University of Alaska Museum, Fairbanks (UAM 22699), as a study skin and partial skeleton with two frozen genetic samples. It was an adult female, mass 223.9 g, wing chord 219 mm, tail 101.8 mm, tarsus 50.4 mm, bill width 4.8 mm, and skull length 61.6 mm, ovary 10 × 3 mm, ova all even-sized; fat extremely heavy; no molt. The stomach contained two caterpillars.

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A SABINE'S GULL IN COAHUILA: FIRST RECORD FROM THE INTERIOR OF MÉXICO

ALDEGUNDO GARZA DE LEÓN and SAMUEL LÓPEZ DE AQUINO, Museo de las Aves de México, Hidalgo y Bolívar #151, Zona Centro, CP 25000, Saltillo, Coahuila, México; cientifica@museodelasaves.org

In the northern interior state of Coahuila, Mexico, over 400 avian species have been recorded, 46% of which are migrant (Garza de León 2003). Because of its geographic position and topography the area serves as a migration corridor for species from eastern, central, and western North America. These geographic conditions enhance the region's importance as an area for wintering and transient birds (Garza de León 1987, Garza de León et al. unpubl. data), despite its aridity. Here we report an occurrence of Sabine's Gull (*Xema sabini*) in the state of Coahuila.

Sabine's Gull is a high-latitude holarctic breeder that winters mainly in the Humboldt Current off western South America and the Benguela Current off southwestern Africa (Olsen and Larsson 2003). In Mexico it is a common migrant and irregular winter visitor off the Pacific Coast (Howell and Webb 1995, Howell and Dunn in press) with two records (in November and February) from the Yucatan Peninsula (Howell and Prairie 1989, Howell et al. 2001); there are no previous records from the interior of Mexico. In the interior of the United States and Canada, Sabine's Gulls are rare to casual migrants in fall and are, overall, more numerous in the West. The species is casual at best in these interior regions in spring, with records from late April to early June, again mainly in the West (Howell and Dunn in press).

During a field trip on 1 April 2006 to a reservoir known as Presa El Tulillo in southern Coahuila (25° 40′ N, 101° 25′ W, 960 m above sea level) we observed a mixed-species group of Ring-billed Gulls (*Larus delawarensis*; 22 individuals) and Laughing Gulls (*L. atricilla*; 4 individuals) feeding together. We discovered the Sabine's Gull within this group by noting a smaller individual that stood apart from the rest of the gulls.

We collected the specimen and deposited it with the ornithological collection of the Museo de las Aves de México in Saltillo, Coahuila, México. The specimen (MUSAVE 2545) had no body fat or molt; we could not determine its sex. The bird had the plumage and bare parts of a typical breeding Sabine's Gull: a gray hood with black lower border, white neck and underparts, the striking wing pattern, and gray mantle and white tail. Its black bill was tipped with yellow, and the legs and feet were black.

There are other unusual records of seabirds in southern Coahuila, particularly at El Tullillo, where both the Parasitic (*Stercorarius parasiticus*) and Pomarine (*S. pomarinus*) jaegers have been recorded (Garza de León 1987). The reservoir, surrounded by aquatic and riparian vegetation, clearly acts as an oasis within the region's arid scrub lands.

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BOOK REVIEWS

Tanagers, Cardinals, and Finches of the United States and Canada: The Photographic Guide, by David Beadle and J. D. Rising. 2006. Princeton University Press, Princeton, NJ. 196 pages, 200 photographs, 30 range maps. Paperback, $29.95. ISBN-13: 978-0-691-11858-1.

Guides treating specific groups of birds have popped up left and right recently. *Tanagers, Cardinals and Finches of the United States and Canada* (hereafter *Tanagers, Cardinals, and Finches*) is one of the first examples in which smaller groups are lumped together and treated in one guide. This aggregation of popular and often brightly colored birds includes many identification challenges, such as redpolls, female-type buntings, and various populations of the Red Crossbill. A critical, modern-style treatment of these subjects would be welcome—is this book it?

Tanagers, Cardinals and Finches includes exactly 200 photographs, covering 46 species, which breaks down to five or six photos for regularly occurring species and one or two for species designated as "extralimital." This number is inadequate in many cases, especially for extralimital species, which often do not have a photo portraying each sex. While many of the photographs are excellent, a stated goal of *Tanagers, Cardinals, and Finches* (p. 1) is to "illustrate as many different plumages of these species as space and the availability of photos permit." Clearly space did not limit the Crimson-collared Grosbeak account to include only a single photo, of a female, because the bottom half of the page is blank. A fall or winter male Lawrence's Goldfinch, more than one photo of subspecies *psaltria* of the Lesser Goldfinch, and a second female House Finch also would have been preferable to half-blank pages.

The brief introduction covers most of the basics but is somewhat marred by poor copy editing. Most obvious is the omission of Blue Grosbeak from the genus *Passerina*. Species accounts include the standard headers: Measurements, Habitat, Behavior, Voice, Similar species, Geographic variation, Distribution, Conservation status, Molt, Description, Hybrids, and References. While this range of topics is broad, the information in each section seems to be little more than a boiled-down version of the *Birds of North America* accounts. The vocal descriptions exemplify my feelings about the text in general: often incomplete and sometimes misleading. In several instances calls, such as the frequently given flight calls of the Blue Grosbeak and Painted Bunting, are not included. Geographic variation in vocalizations is not addressed in the American Goldfinch, Pine Grosbeak, and Purple Finch, among others.

Structural characteristics are usually noted in the first photo caption for each species. While I applaud the authors for making an effort to discuss structure, placing this information in the text also would have been helpful. Unfortunately, this is only a minor example of how the plates and text seem to have been produced in isolation. One of the weakest points of this guide is the attempt to apply molt and plumage terminology, which is often inconsistent between accounts and plate captions and results in a great deal of confusion. For the Rose-breasted Grosbeak, for example, a "first alternate male" is pictured, but this plumage is omitted from the species account. There is, however, a description of "first-winter males," yet the photograph of this plumage is labeled "first basic." All of the photos are labeled using terms like "definitive basic" and "first basic," but descriptions in the text are often of "adult" or "first-winter" plumages. These terms are ostensibly equivalent, but confusion could have been avoided by using one set of terms consistently. Instead of applying a strict Humphrey–Parkes terminology inconsistently, the authors would have done better to use terms such "first year," which are more easily understood by a wider audience.

The inconsistency can also be misleading, as in the Hoary Redpoll account. This species undergoes only one molt per year, but photo 36.3 is labeled as a "breeding female," while 36.4 is a "basic female." This might lead readers to believe there are

two molts and plumages, which can be distinguished, but in fact both photos show the basic plumage; the only distinction is a difference in feather wear. On p. 106 we are told that the Brown-capped Rosy-Finch lacks a prealternate molt, but the rosy-finch in photo 27.2 is labeled as "definitive alternate." Similar mistakes apply to the Evening Grosbeak, Lesser Goldfinch, and Hepatic Tanager.

The text in general references surprisingly few sources. There are several instances where a search for recent literature (such as papers published after the *Birds of North America* accounts) would have prevented inaccuracies. Accounts are therefore littered with minor errors and fail to include much relevant information. For example, Willoughby et al. (2002) concluded that Lawrence's Goldfinch lacks a prealternate molt, and Butler et al. (2002) described a molt-migration by adult Western Tanagers. In the Red-legged Honeycreeper account, molt timing is incorrect for Mexico: males reportedly molt into a dull female-like plumage in June, but the photo taken in Chiapas, Mexico, in June is of a stunning male with no indication of active molt; males usually molt later, and this dull plumage is seen from August to February (Howell and Webb 1995). Furthermore, the text (p.34) states that the Red-legged Honeycreeper "may be the only tropical passerine to have such an eclipse plumage." This "eclipse" plumage is not included in the description, however, and it is well-known that other neotropical passerines, such as the Blue-black Grassquit and some *Sporophila* seedeaters, also have an "eclipse" plumage (e.g., Howell and Webb 1995).

The attention given to geographic variation is often a good indication of the overall quality of a family guide. It was nice to see an appendix showing Red Crossbill flight calls, but variation in other accounts was not treated as fully. The term "Hepburn's" Gray-crowned Rosy-Finch encompasses three races that breed in Alaska, but although the guide includes these three races it does not acknowledge this widely used term. The book's introduction (p. 7) states that "we mention named subspecies if they occur north of Mexico and note general trends of variation," but this is not always true. For example, the photos show two distinct subspecies of the Yellow Grosbeak (including *aurantiacus*, unrecorded north of southern Mexico), but neither is labeled as such, and the text does not discuss geographic variation in this species. The only information given (p. 47) states that "*P. chrysogaster* of South America is considered conspecific by some authors." The reader is thus forced to seek other sources to discern why the two male Yellow Grosbeaks look so different.

Tanagers, Cardinals, and Finches covers a beautiful group of birds captured in nice photos. Unfortunately, the accompanying text is disappointing and missed an opportunity to discuss and elucidate many points. A modern-style identification guide for these birds is still needed.

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Jessie H. Barry

Important Bird Areas of Nevada by D. E. McIvor. 2005. Lahontan Audubon Society. 160 pages, numerous color photographs and maps. Softback. $19.95. ISBN: 0970343825.

Nevadans have long claimed that there is more to their state than a bunch of sagebrush and dirt. And Nevada birders are the same, emphasizing riparian zones filled with warblers and buntings, desert lakes covered with pelicans and grebes, wetlands loaded with avocets and stilts, and montane forests with their woodpeckers, tanagers, and grosbeaks. But, as Ray Nelson's cover painting for *Important Bird Areas of Nevada* suggests, what is really important is perhaps all those areas in between—the gray-brown land filled with gray-brown birds: the Ferruginous Hawk, Prairie Falcon, Greater Sage-Grouse, Burrowing Owl, Sage Sparrow, and Sage Thrasher stare out from the cover like a bunch of mobsters on the Las Vegas strip and are deadly serious about the message they intend to send.

This book summarizes the results to date of the Nevada Important Bird Area (IBA) Program, guided from its inception until recently by the book's author, Don McIvor. The IBA concept originated with BirdLife International and has spread globally as a mechanism for highlighting areas that should receive the attention of conservationists. The basic idea is that objective criteria are used systematically to identify a set of high-priority sites where conservation efforts can be focused. All over the world this approach has proven effective in getting the attention of governments, conservation organizations, and the public.

McIvor's book begins with a description of the IBA system, both generally and as it was applied in Nevada. The introduction also provides a helpful summary of the challenges facing protectors of the state's birds, with water use quite rightly highlighted as the first item on the list. There's no way around the fact that Nevada is a desert, and everything that happens in the state—whether it involves birds or people—revolves around water. In contrast, from my perspective the concerns raised about the evils of urbanization (Nevada is the most urbanized state in the union; that is, the one with the greatest portion of its population in urban areas) seem somewhat misplaced. Clearly, development is a major concern, but ultimately it is the number of people that is the problem, not the degree to which they are concentrated into urban areas. Indeed, urbanization actually minimizes many effects of human populations, both by reducing the total area of land devoted exclusively to human use and by making the use of water, energy, and other resources more efficient. In other words, if you are going to develop, it is better (for wildlife) to cram people into urban areas than to spread them out across the landscape. Overall, though, the book's list of concerns hits all the right points.

Most readers will turn straight to the site descriptions, and there are probably two classes of people for whom these accounts will be of interest. First, the intended audience of conservation practitioners, who will find nice succinct descriptions of what these sites are and why they are considered important. Second, birders, who will turn to these accounts as a way to learn of new places to visit in a large state with a limited birding literature.

With my conservation biologist's hat on, I found myself delighted that so much had been consolidated into such a small book but simultaneously wanting so much more. My biggest gripe is the numbers. Each account comes with a table summarizing the abundance of high-priority species and explaining the criteria used to identify the site as an IBA. In some cases, I found the numbers a bit hard to believe, undoubtedly just showing my ignorance, but to satisfy my curiosity I would have really liked more information on how the numbers were derived. In other cases, I was left wondering whether the stated numbers were really enough to warrant highlighting a particular site. Is a density of one to four pairs of Sage Sparrows per square kilometer really enough to qualify a site as an IBA? Maybe, but I'd sure like to see the justification.

And if one site with this density gets designated, I'd like to be sure that there aren't dozens (or hundreds, for this particular example) of other sites with similar densities that got left out.

When the birder in me took over, my response was "Wow! I lived in Nevada for six years. How can there be all these great places that I've never heard of?" In part the answer is that I was an apathetic, narrow-minded graduate student and didn't take the time to explore. But it is also a sign of how far Nevada birding has come in the past ten years, thanks to those who did put in the effort. This book is not, and clearly is not intended to be, a bird-finding guide. But in a big state with a depauperate birding literature, it will help get birders to new places, and give them a sense of where to go once they get there and what they might find. If people follow up, and also stop at other likely spots along the way, the growth in knowledge will continue to accelerate.

Overall, those criticisms that I have relate more to the IBA program as a whole than to the specifics of the Nevada enterprise. Identifying sites via nominations, rather than an objective assessment of all possible places, will inevitably bias the selection toward areas that are already well known, sometimes for reasons other than their conservation importance (e.g., their proximity to a city with lots of birders, or their propensity to act as a migrant trap). Equally, we need better ways of identifying the top sites for sparsely distributed species. How do we decide what makes a location especially important for a species like the Sage Sparrow? Densities well above average and good reproduction must be part of the equation, but this information is incredibly hard to come by. The underlying cause of all these problems is simply that we lack the broad-scale inventory data needed to do things better. And this is a universal problem, one that we have even in my current home state of Connecticut, which compared to Nevada is puny and crawling with birders.

Don McIvor is clearly not responsible for these problems, and I don't know that I have solutions. Anyone who has worked closely on IBAs has grappled with the same issues and come to peace with them in his or her own way. Nonetheless, these concerns bear repeating because they are often sidelined simply on the grounds that they are hard to solve. *Important Bird Areas of Nevada* has gone a long way toward advancing bird conservation in the state of Nevada, and both McIvor and Lahontan Audubon deserve enormous credit. Theirs is just the first step, though. Those mobster-wannabes on the book's cover are gone from the land where the Strip now lies. If they and their flashier cousins are to survive, many more steps will have to follow.

Chris Elphick

FEATURED PHOTO

WILSON'S AND COMMON SNIPES

JON L. DUNN, RR 2, Box 52R, Bishop, California 93514; cerwa@earthlink.net
JONATHAN ALDERFER, 4845 Hutchins Place, NW, Washington, D.C. 20007; Jkalderfer@aol.com

Taxonomic History

Described by Ord in 1825, Wilson's Snipe (*Gallinago delicata*) enjoyed the status of a full species through the 4th edition of the AOU Check-list (1931). Then, with the publication of the 20th supplement to its *Checklist of North American Birds*, the AOU (1945) decided to treat it as conspecific with the Common Snipe (*G. gallinago*) of the Old World. The reference cited for this change was the treatment in Witherby et al. (1940). In lumping these two taxa, Witherby et al. (1940) relied on the comments made by Meinertzhagen (1924) at a meeting of the British Ornithologists' Club. Meinertzhagen pointed out that except for the width of the outer tail feathers all of the visual characters known at the time overlapped. Flight-display sounds were not analyzed. *Gallinago delicata* was not the only species lumped within *G. gallinago*. The African Snipe (*G. nigripennis*), the South American Snipe (*G. paraguaiae*), and the Puna Snipe (*G. andina*) were also included, although studies of display sounds led eventually to these three taxa being resplit. Given that *G. delicata* has display sounds distinctly different from those of *G. gallinago* (Miller 1996), for consistency with the treatment of other species the AOU (2002) restored Wilson's Snipe to full species status. The British Ornithologists' Union has not resplit these two taxa, and on the basis of haplotypes found in restriction fragments of mitochondrial DNA of two specimens of each, Zink et al. (1995) reported that the genetic difference between them is minor. Between the two species, because of the different shapes and lengths of the outer tail feathers, the "winnowing" sounds produced during aerial display ("drumming flights") by air rushing past the spread outer tail feathers differ distinctly. The outer tail feathers can be extended at right angles to the body and vibrate loudly when air passes over their vanes during a display flight. Both males and females can produce the resulting winnowing sounds, but males display more often (Mueller 2005). The sexes' tail-feather shapes and sizes are similar. The sounds produced by Wilson's Snipe are distinctly higher pitched than those of the Common Snipe because the outer tail feathers are shorter and substantially narrower, The wider outer tail feathers of the Common Snipe produce a lower-pitched vibrato. The two species' "skiape" call notes (a vocalization that the birds give when flushed) sound basically identical.

Distribution

Wilson's Snipe is a monotypic species widespread across North America, while the polytypic Common Snipe (comprising *G. g. gallinago* and *G. g. faeroeensis*) is widespread across Eurasia. In North America the Common Snipe is best known as a regular migrant through the western Aleutian Islands, especially in spring. In some years, a few may summer, and a nest was found on Attu in 1984 (Gibson and Byrd 2007). The Common Snipe has also been collected on Shemya Island in winter. Farther east it is much less regular, but it has been collected as far east as Adak Island (Aleutian status from Gibson and Byrd 2007). It also occurs with some regularity as far north and east as the Pribilof Islands (specimens). It is apparently only casual farther north, on St. Lawrence Island (specimens). It is unrecorded from the Alaska mainland.

Elsewhere in North America, there is a specimen of the Common Snipe from eastern Canada (24 December 1927, Jack Lane Bay, eastern Labrador—Austin

1932; analysis with photos of specimens by Holder and Trimble 2003).. The species is casual in Greenland and accidental in Bermuda (AOU 1998).

Wilson's Snipe breeds in the eastern Aleutians as far west as Unalaska, and there are two recent spring records (one specimen) as far west as Adak, in the central Aleutians (Gibson and Byrd 2007). It has been reported (on the basis of display sounds) from the Pribilof Islands and St. Lawrence Island in the Bering Sea, but to date there are no specimens or archival audio recordings.

Identification

The two photographs on this issue's back cover compare Wilson's and Common Snipes, and the poses allow study of the underwings that is rarely possible in the field. The Wilson's Snipe was photographed on 11 July 2006 at Carden Plain, Ontario; the Common Snipe was photographed on 14 March 2004 in Thailand.

Useful identification summaries, illustrated with color sketches and/or photos, appear in Carey and Olsson (1995), Bland (1998), and Bland (1999). Criteria have not been fully worked out for identifying in the field either vagrant Common Snipes in North America or vagrant Wilson's Snipes in Eurasia (Rowlands et al. in press). Positive identification of either species (as a vagrant) requires either a specimen or photographs that allow close scrutiny of plumage details rarely visible to birders in the field. We offer no new identification criteria here, but the superb photos on the back cover illustrate some of the known differences. It bears repeating that many of the published differences between Wilson's and Common Snipes are averages only and that in these characters the species overlap to some degree.

On average, the Common Snipe is a warmer-colored bird with weaker barring on the sides and flanks and has broader white tips to the underwing coverts, resulting in a whiter underwing. The photograph of a Common Snipe on the back cover shows a bird with extensively white underwings and axillaries. Compare this to the densely barred pattern on the underwings of the Wilson's Snipe, especially on the axillaries (these feathers are typically 50% or more black in Wilson's). Alderfer's examination of skins (28 spread wings, USNM) showed very little variation in the pattern of underwings and axillaries in Wilson's Snipe. However, variation in the pattern of the underwings and axillaries in the Common Snipe is extensive, with a few specimens approaching Wilson's Snipe in density of barring. (This feature is difficult to assess in standard museum study skins.) A snipe with mostly white underwing coverts and white or lightly barred axillaries is almost certainly a Common Snipe, but the reverse is not necessarily true. Some Common Snipes have barred axillaries and underwing coverts very similar to Wilson's, particularly those from Asia, which generally have more heavily marked underwings (USNM skins). Alderfer examined seven specimens of the Common collected in North America (St. George Island in the Pribilof Islands, Alaska). The axillaries on those specimens were 20–40% black, but all seven had white or white-tipped underwing coverts that formed noticeable white patches. None of those specimens had axillaries as lightly barred as the bird in the back cover photograph. The back cover photograph shows a paler example of a Common Snipe from Thailand whose underwing coverts and axillaries are quite different from those of any Wilson's Snipe specimens that Alderfer examined.

In flight, from both above and below, the Common Snipe usually shows an obvious white trailing edge to the secondaries. This feature is not readily visible in the photograph—a few secondary tips are partially visible behind the outermost primary. A white trailing edge is usually faint, at best, in Wilson's—the narrow, white secondary tips can be seen in the photograph—and the width of the white tips averages much narrower than in the Common Snipe. A few specimens of Wilson's show broader white tips to the secondaries approaching those of the Common. This feature is an indicative—but not diagnostic—field mark.

The pattern and hue of the pale stripes on the head and scapulars appear to be quite variable in both species and of little use in identification. Wilson's Snipe averages darker (blacker) dorsally and often shows white dots ("pips") on the dark-centered scapulars. The scapulars average paler (warmer brown) on the Common Snipe and tend to show thin wavy bars on the interior, rather than white pips. Common Snipe specimens from Asia average darker above than European specimens but have similar barring on the scapulars. Common Snipes of the subspecies *faeroeensis*, breeding in Iceland and the Faeroe Islands, have scapulars with intricate interior barring (quite distinctive), appear warmer above (more rufous), and have upperwing coverts that are more uniformly barred (rather than dotted with pale marks). From what could be seen on the seven specimens of *faeroeensis* examined, the axillaries appear rather heavily barred (40–50% black), but the underwing coverts show extensive whitish areas.

In-hand features not visible in the photographs on the back cover (and almost impossible to see in the field) include the width of the outermost tail feathers and the number of tail feathers. The width of the outermost tail feathers may be the most reliable and diagnostic feature for distinguishing these two species (Rowlands et al. in press) and, significantly, are the feature responsible for the different winnowing sounds produced during display flights that were largely responsible for the species being resplit. Meinertzhagen (1924) published this important distinction early on and gave a range of measurements with no zone of overlap. Bland (1999) gave the following average widths, measured 20 mm from the feather's tip: Common 12.8 mm, Wilson's 7.2 mm. The difference could probably be appreciated on a razor-sharp image of a bird with its tail fanned. Meinertzhagen (1924) pointed out that the pattern on the outermost tail feathers averages more barred and that the bars are blacker on Wilson's Snipe, but the variability of this pattern in the Common Snipe renders this feature only suggestive of one species or the other. Additionally, the number of tail feathers averages higher in Wilson's (16) than in the Common (14, but as few as 12 and as many as 18) (Meinertzhagen 1924). This feature is very difficult to assess on specimens and useless in the field—the rectrices are mostly obscured by the tail coverts and usually tightly stacked.

In conclusion, other than on the western Aleutians and Bering Sea islands, the Common Snipe is virtually unknown in North America. Other than at those locations, the field identification of a vagrant Common Snipe would likely require exceptional observation conditions and high-quality photographs showing a suite of field marks. On the basis of our examination of museum skins, snipes with mostly unbarred axillaries and large white areas on the underwings (as in the photograph) can reliably be identified as the Common. Wilson's Snipe shows very little variation on the underwings and axillaries—all that Alderfer examined were densely barred and lacked large white patches. The width of the outermost tail feather is another reliable distinction but not useful in the field.

We gratefully acknowledge the assistance of D. D. Gibson for reviewing this paper and providing extensive information about the status of both taxa in western Alaska. James Dean, bird collections manager at the National Museum of Natural History (USNM), Smithsonian Institution, Washington D.C., graciously extended Alderfer access to the extensive collection of snipe housed there. We thank Harold Stiver (Wilson's Snipe) and Suppalak Klabdee (Common Snipe) for their informative photographs.

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PRESIDENT'S MESSAGE

With this issue of *Western Birds*, I am reinitiating the President's Message, which is my chance to communicate with you and to promote dialogue between the Western Field Ornithologists' directors and membership.

I first want to recognize David Yee for his leadership as president over the past three years. Under David's leadership, we accomplished much, and although at times it might have seemed like herding cats, it has paid off for the directors and the organization as well. Thank you for your persistence, patience, and guidance these past three years, and for your 18 consecutive years of contributions to this organization on our board of directors!

Within these past three years, the board of directors initiated and adopted a new mission statement within the revised WFO by-laws (please see www.wfo-cbrc.org for both). The board has also established seven committees to focus efforts of skilled board members to specific tasks. These committees are field trips, finance, future meetings, membership, nominations, publications and scholarships. We welcome members' input on these committees, and invite you to assist the board in development of policy and planning for our organization's future. The board has expanded to include 12 directors plus 4 officers to reach our goals of diversity in skills, gender, and geography goals. We continue to seek energetic and qualified people to maintain and increase the quality of WFO as a regional, field-oriented ornithological organization.

Our September 2006 annual meeting in Boulder was a huge success as described in the concise recap in *Western Birds* 37(3). Because we seek membership from throughout the West, we will continue to hold our annual meetings in a variety of states. The plans for the 2007 meeting in Henderson, Nevada, are nearing finalization, and we look forward to seeing you all at this great venue.

The challenges faced by WFO and the board within the next few years are considerable. We want to increase regional representation in our membership, as well as to attract and retain new members. As with many professional ornithological organizations, ever-increasing publication costs necessitate increasing membership dues and cost of other publications. I am proud to say that *Western Birds* continues to be our flagship effort and has not been seriously affected by these cost limitations. The quality and diversity of the articles and the photos are a source of great pride for this organization. Special WFO-sponsored publications such as the forthcoming *Rare Birds of California* exemplify our commitment to the production of affordable, high-quality ornithological products. Additionally, the WFO website will become an increasingly important tool for WFO by providing relevant ornithological information to our members as well as by promoting WFO programs, field trips, and membership.

As we address these challenges, I want to assure you that the board is committed to maintaining our core values as a western-region, field-oriented ornithological organization. We will be working on short- and long-term goals as we chart the course for the next 2, 5, and 25 years. We welcome your participation in this process. I am impressed with the dynamism, energy, and diversity of the board, and together I am sure that we can use these qualities to guide WFO in the 21st century. As your new president, I thank you for your trust and support, and I look forward to serving WFO to the best of my abilities.

Dave Krueper

Photo by © Brad Schram of Arroyo Grande, California:
Ross's Gull (*Rhodostethia rosea*)
Red Hill, Imperial County, California, 18 November 2006.

Back cover "Featured Photos" by © Harold Stiver of Paris, Ontario, Canada: Wilson's Snipe (*Gallinago delicata*), Carden Plain, Ontario, 11 July 2006 (top); and © Suppalak Klabdee of Bangkok, Thailand: Common Snipe (*Gallinago gallinago*), Laem Pak Bia, Thailand, 14 March 2004 (bottom).

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Front cover photo by © Arlene Ripley of Dunkirk, Maryland: Smew (*Mergellus albellus*), Willow Springs, Tuolumne County, California, 29 January 2007.

WESTERN BIRDS

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STATUS OF THE BROAD-WINGED AND RED-SHOULDERED HAWKS DURING FALL MIGRATION IN SOUTHWESTERN IDAHO, 1995–2006

JAY D. CARLISLE, GREGORY S. KALTENECKER, and RYAN S. BRADY, Idaho Bird Observatory, Department of Biology, Boise State University, 1910 University Drive, Boise, Idaho 83725; jaycarlisle@boisestate.edu (current address of Brady: Wisconsin Department of Natural Resources, 2501 Golf Course Road, Ashland, Wisconsin 54806)

ABSTRACT: Twelve years of counting raptors during fall migration near Boise, Idaho, yielded 214 Broad-winged and 9 Red-shouldered Hawks, revealing these species as much more frequent in Idaho than previously known. The Broad-winged Hawk is an uncommon, annual fall migrant in Idaho. The Red-shouldered Hawk is at least casual, possibly nearly annual, during fall migration. These data match increased sightings from other western states that have likely resulted from a combination of increased observer coverage and possible range expansions and/or numerical increases for both species in the West.

Using 12 years of standardized migration monitoring data, we review and significantly update the status of the Broad-winged (*Buteo platypterus*) and Red-shouldered (*B. lineatus*) Hawks in Idaho during fall migration. The Broad-winged Hawk breeds mostly across eastern and central North America and tends to migrate east of the Rocky Mountains but is a rare to uncommon migrant in the West (McCaskie 1968, Goodrich et al. 1996). The Red-shouldered Hawk has a disjunct distribution, occurring in the eastern U.S. and southeastern Canada west to Minnesota and eastern Texas with a more restricted population centered in California (Crocoll 1994). Both species are currently considered rare in Idaho and are listed as review species by the Idaho Bird Records Committee (IBRC; http://idahobirds.net/ibrc/reviewspecies.html, accessed 5 August, 2007; Burleigh 1972, Stephens and Sturts 1998). As of August 2007, six records of the Red-shouldered Hawk and one of the Broad-winged Hawk had been accepted for Idaho, although additional reports of both species have been submitted (http://idahobirds.net/ibrc/reviewspecies.html). Therefore, our goal in this paper is to use recent data to update the status of these species in Idaho and to consider these results in the context of findings from surrounding states.

Methods

We conducted standardized autumn raptor-migration counts at Lucky Peak, Ada County, Idaho, from August 25 to October 31 of 1995–2006 (Kaltenecker et al. 2006). In addition, we captured and banded raptors at this site and at Boise Peak, Boise Co., approximately 6 miles to the north (see Kaltenecker et al. 2006 for exact locations and methods). Both sites are situated along the Boise Foothills, a ridgeline near Boise trending north–south. Lucky Peak is the site of the only full-season raptor-migration count in Idaho (Smith and Hoffman 2000). All Broad-winged Hawks we report were observed or captured at Lucky Peak, whereas most Red-shouldered Hawks were observed at Lucky Peak and one was captured at Boise Peak.

Hawk-counting methods were similar to those described by Hoffman and Smith (2003). Observers were well trained at identification of raptors in flight, primarily on the bases of Dunne et al. (1988), Clark and Wheeler (2001), and Wheeler (2003), and used 8× or 10× binoculars for scanning and a 20–60× spotting scope for identifying distant birds. At least two observers were present during all observations. The major field marks used to identify migrating Broad-winged Hawks were their small size (in comparison to the Red-tailed Hawk, *B. jamaicensis*, the most common *Buteo* counted at the site), relatively shorter wings, somewhat pointed wingtips, a less distinct (juveniles) to distinct (adults) dark trailing edge on an otherwise lightly marked underwing, and broad tail with alternating dark and light bands. The major field marks used to identify migrating Red-shouldered Hawks were size smaller than the Red-tailed Hawk, wingtips less pointed than in the Broad-winged Hawk, buffy (juveniles) to whitish (adults) crescent-shaped patch at the base of outer primaries, broad tail with many alternating dark and light bands, and an *Accipiter*-like "flap and glide" flight pattern.

Results and Discussion

We observed 214 Broad-winged Hawks over the 12 years of the study (17.8 birds per autumn), with annual totals ranging from 7 in 1996 to 33 in 1998 (Table 1). Two of these birds were captured, a light-morph adult (Figure 1) and a dark-morph immature (Figure 2). The yearly totals at Lucky Peak are within the range of those observed at other western sites of raptor-migration counts (4–103 per autumn), and the only sites with higher count rates are the Goshute Mountains in Nevada (40 per autumn; Hoffman and Smith 2003) and Golden Gate Raptor Observatory in California (103 per autumn; http://www.ggro.org/research.html, accessed 5 August 2007). At Lucky Peak, we recorded Broad-winged Hawks from late August through late October, but the majority of birds (91.6%) passed the site between September 10 and 30, a peak migration period similar to that observed at other raptor-migration count sites in both western and eastern North America (Table 1; Goodrich et al. 1996, Hoffman and Smith 2003). Observers recorded the age of nearly half (46.7%) of all Broad-winged Hawks counted, and the age ratio among these was biased slightly toward adults (54% adults vs. 46% juveniles). Observers also recorded the color morph of approximately 40% of the Broad-winged Hawks counted, and, as expected, the light morph was the most common (83.1%; 59 of 71 recorded). Broad-winged Hawks

Table 1 Temporal Distribution of Broad-winged Hawks during Fall Migration at Lucky Peak, Ada Co., Idaho, 1995–2006

Date	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Aug 28				1									1
Aug 29													0
Aug 30						2							2
Aug 31													0
Sep 1													0
Sep 2				1									1
Sep 3				1									1
Sep 4													0
Sep 5													0
Sep 6													0
Sep 7	1												1
Sep 8							2				1		3
Sep 9											1		1
Sep 10	1											1	2
Sep 11	1	3				2						2	8
Sep 12						1						1	2
Sep 13				3		2		1	2				8
Sep 14					1		5	1	1				8
Sep 15				3		1	13					1	18
Sep 16				1	1		1						3
Sep 17						1	1						2
Sep 18					1		1				7	1	10
Sep 19			1		4		1		1		4		11
Sep 20			1			2	1		1		1		6
Sep 21	2		1	3	4				1	1	4		16
Sep 22	1	1		6	1			5		7	3		24
Sep 23	2	1	2	7		2		9		1		9	33
Sep 24			1	2			1	1	1[a]	1			7
Sep 25	1[a]	1	2					2		2			8
Sep 26		1	2			2	2		1		4		12
Sep 27				2			1			1			4
Sep 28			1	2	3					2	1		9
Sep 29				1						2			3
Sep 30					1		1						2
Oct 1													0
Oct 2								1					1
Oct 3												2	2
Oct 4					1				2				3
Oct 5													0
Oct 6											1		1
Oct 7–24													0
Oct 25							1						1
Total	9	7	11	33	17	15	31	20	10	17	27	17	214

[a]Bird captured.

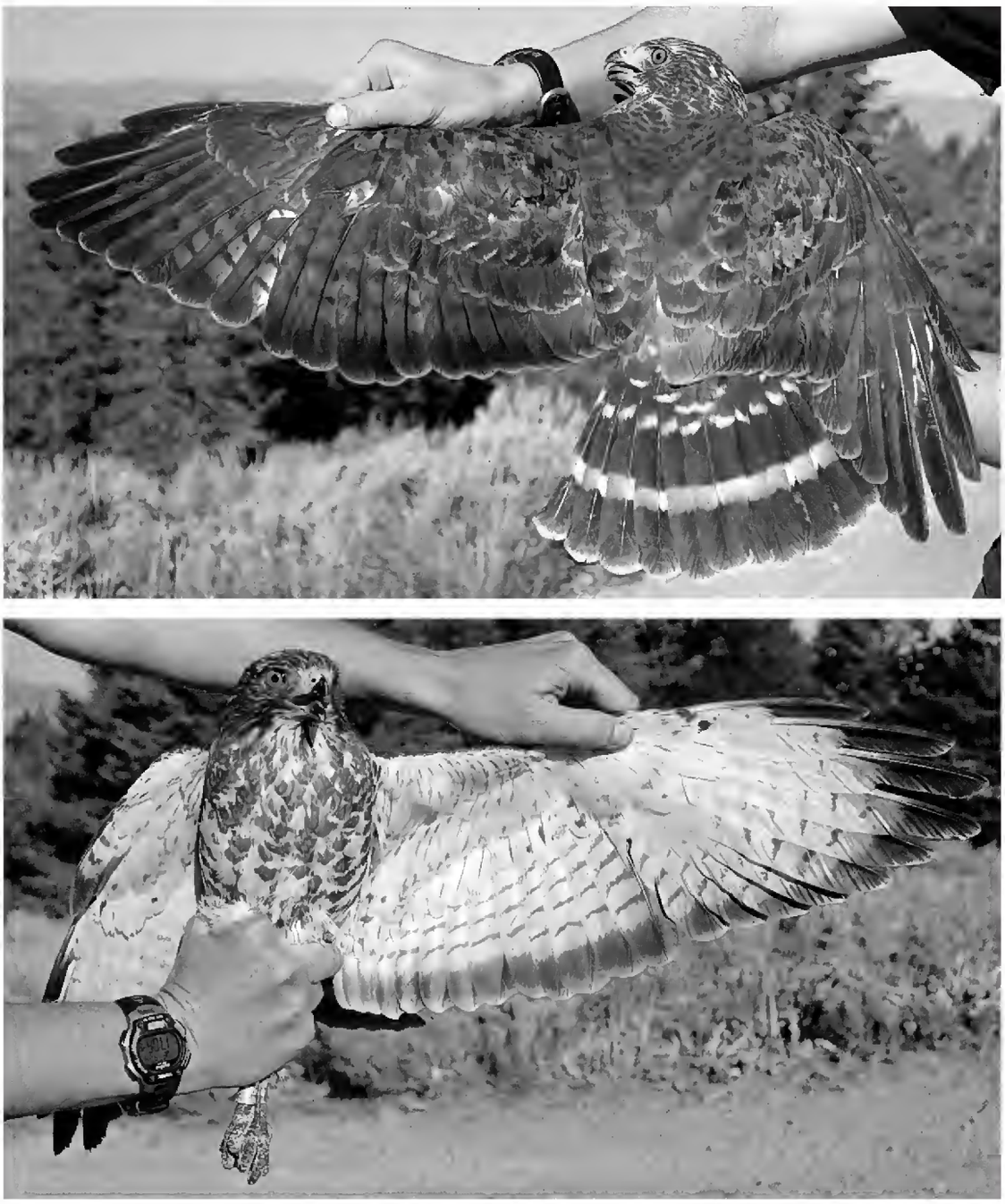

Figure 1. Light-morph adult Broad-winged Hawk captured at Lucky Peak, Ada Co., Idaho, on 24 September 2003.

Photos by Ryan Brady

were usually observed singly, migrating in conspecific groups of two to five individuals, or mixed with other migrating birds, primarily Turkey Vultures (*Cathartes aura*) and Red-tailed Hawks.

We recorded Red-shouldered Hawks much less frequently, observing nine over the 12 seasons of our study. Eight individuals were observed during standardized counts at Lucky Peak, and one bird was captured at Boise Peak (Figure 3). Like that of the Broad-winged Hawk, the number observed at Lucky Peak during this period is comparable to the number at other western raptor-migration count sites outside of California, with 3 and

Figure 2. Dark-morph juvenile Broad-winged Hawk captured at Lucky Peak, Ada Co., Idaho, on 25 September 1995.

Photo courtesy Idaho Bird Observatory

15, respectively, counted at the Goshute Mountains, Nevada, and at Bonney Butte, Oregon, between 1995 and 2006 (Smith 2001, Smith and Neal 2007a, b). The dates of our Red-shouldered Hawk sightings were 28 Sep and 18 Oct 1997, 23 Sep 1998, 11 Sep 1999 (the captured individual), 5 Oct 2001, 28 Sep 2002, 28 and 29 Sep 2003, and 19 Sep 2004. Thus, the sightings ranged from 11 September to 18 October, with four on either 28 or 29 September. The mean passage date for these nine Red-shouldered Hawks in Idaho was 28 September; this is slightly later than long-term means at the Goshute Mountains, Nevada (19 September, n = 6, 1983–2006), and Bonney Butte, Oregon (24 September, n = 15, 1995–2006; J. Smith pers. comm.). These dates are generally earlier than Red-shouldered Hawk migration in the East, which tends to begin in September for immatures and October for adults and to continue into December, with an overall peak in late October and early November (Crocoll 1994). Most likely this difference reflects a difference in the migratory behavior of the various subspecies. *Buteo l. elegans*, the western subspecies responsible for the vast majority of sightings in western states (Pyle et al. 2004), regularly disperses after breeding (Wheeler 2003), whereas *B. l. lineatus*, the migratory eastern subspecies, undertakes a more typical southward migration during mid- to late autumn (Crocoll 1994). We should note that all Red-shouldered Hawks observed in our study were moving from north to south.

All Red-shouldered Hawks encountered in this study were juvenile. We identified eight as *B. l. elegans* on the basis of having more black and white in the flight feathers and rufous in the underwing coverts (e.g., Figure 3). The bird seen on 28 September 2002, however, viewed soaring overhead at close range by many observers (including all authors, two of which have extensive experience with both eastern and western subspecies), appeared

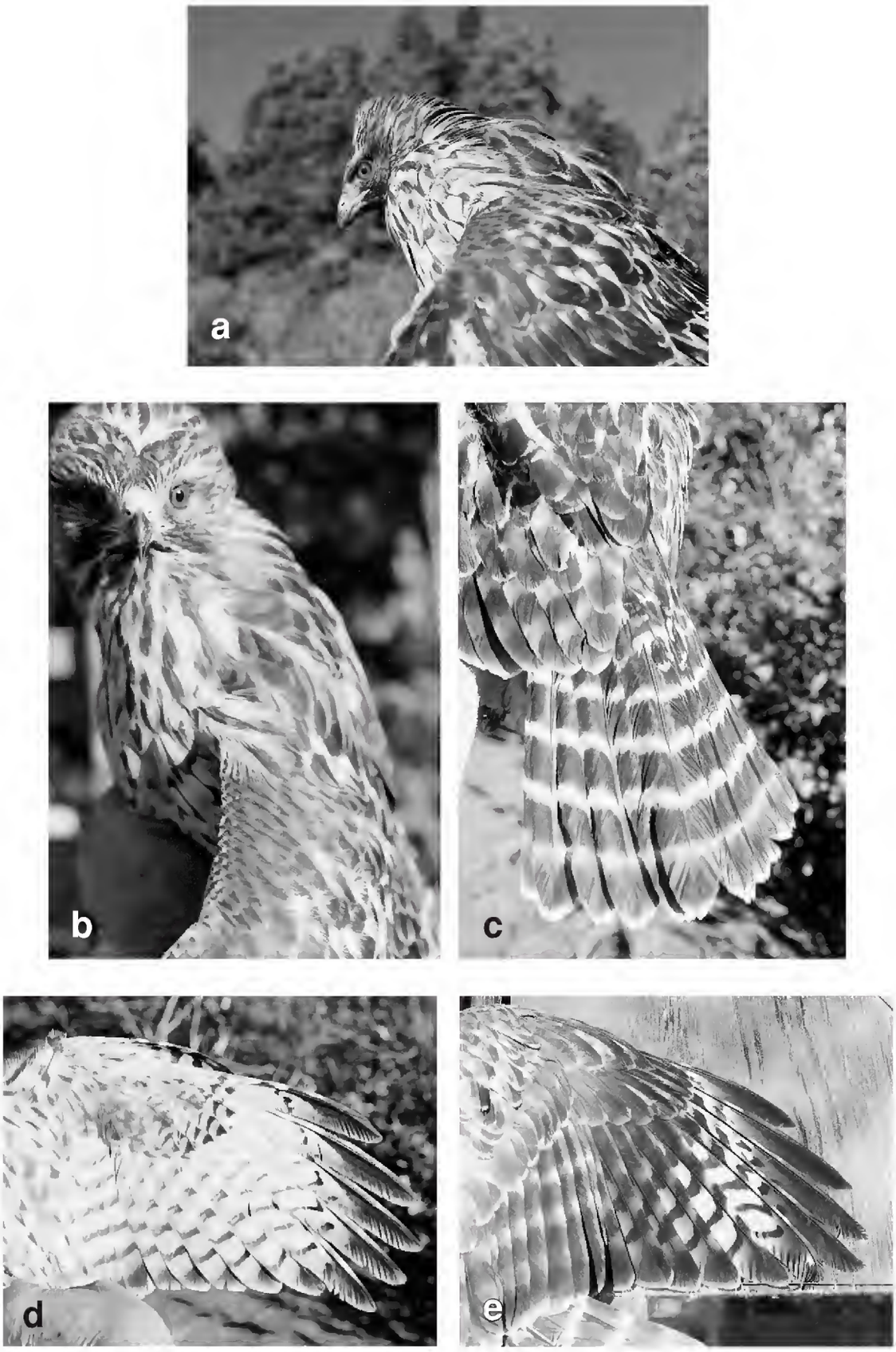

Figure 3. Juvenile Red-shouldered Hawk (*B. l. elegans*) captured at Boise Peak, Boise Co., Idaho, on 11 September 1999. Photos (d) and (e) show the underwing and upperwing, respectively.

Photos by LeRoy Fink

to be a juvenile of the eastern (nominate) subspecies, *B. l. lineatus,* on the basis of its browner flight feathers, distinct brown streaking on an otherwise whitish chest, and very little rufous in the underwing coverts. Although the plumage of juvenile *B. l. elegans* often resembles that of adults, this bird's plumage was not adultlike and exhibited the brown, white, and tawny tones expected for juvenile *B. l. lineatus* (Dunne et al. 1988, Clark and Wheeler 2001, and Wheeler 2003). We recognize that without photos or physical evidence it is difficult to rule out *B. l. alleni* or *B. l. extimus* (subspecies in the southern United States) definitively. However, the longer-distance migratory behavior of *B. l. lineatus*, combined with the northerly location of the sighting, makes *lineatus* the most likely of the eastern subspecies to occur in Idaho.

Implications

Results from our study significantly contribute to knowledge of the status of the Broad-winged and Red-shouldered Hawks in Idaho. These data demonstrate that during fall migration both species are more frequent in Idaho than previously realized. Further, our data show that the Broad-winged Hawk is an uncommon migrant in southwestern Idaho during fall, whereas the Red-shouldered Hawk is casual, occurring in 7 of the 12 seasons we studied. Our counts at Lucky Peak, maintained throughout the fall every year since 1995, placed well-trained observers in a place of high raptor concentration. As a result, and because this effort was the first of its kind in Idaho, we now have a more thorough understanding of the status and migration timing of many western raptor species in the state, including the migration and/or postbreeding dispersal of the Broad-winged and Red-shouldered Hawks. Although increased observer effort has undoubtedly contributed to this change in these species' known status, we should also consider the possibility that either or both species have undergone range expansions and/or population increases.

Are Broad-winged Hawks increasing in the West or are there simply more observers in more places (Stirling 2001)? Possibly both factors have contributed to increased sightings of this species in Idaho and elsewhere in the West. Some evidence suggests that the Canadian breeding range of the Broad-winged Hawk has expanded west in recent decades (White 1994, Hoffman and Smith 2003), and this is corroborated by increased sightings at several western raptor-migration count sites (Smith and Hoffman 2000, Hoffman and Smith 2003). At the Golden Gate Raptor Observatory, however, the site where this species is most numerous in the West, annual totals have fluctuated dramatically but since the mid-1990s there is no obvious trend (www.ggro.org/research.html). In addition to our fall migration data, there are 17 reports (presently awaiting voting) of the Broad-winged Hawk in Idaho, of birds observed from late April through early June, primarily in the last 15 years (http://idahobirds.net/ibrc/reviewspecies/kite_crane.html#broadwingedhawk, accessed 5 August 2007). This period coincides with timing of the species' spring migration in the eastern and central U.S. (Goodrich et al. 1998). As in Idaho, reports from Oregon are less frequent in spring than in fall, but spring reports there seem to fit the Idaho pattern (Mlodinow et al. 2006b). Our 12-year data show a nonsignificant increase in

Broad-winged Hawk numbers (J. Smith and G. Kaltenecker, unpubl. data), but they are not from a period long enough to corroborate data in Smith and Hoffman (2000) and Hoffman and Smith (2003) implying an increasing population. Whether or not the species is increasing in the West, an increase in coverage by knowledgeable observers has certainly contributed to the increase in sightings, and our data clearly suggest that the Broad-winged Hawk migrates through Idaho regularly.

Where are the Red-shouldered Hawks observed in Idaho coming from? Bloom (1985) reported that the western *B. l. elegans* is largely nonmigratory, whereas the widespread eastern *B. l. lineatus* is a regular migrant through the eastern and central U.S. (Crocoll 1994). Though nonmigratory, *B. l. elegans* does disperse regularly, beginning in August (J. L. Dunn pers. comm.). Wheeler (2003) noted that whereas most birds disperse less than 100 miles, dispersal is multidirectional and some birds move greater distances. Also, there is some evidence, including the Breeding Bird Survey, that the population of *B. l. elegans* has expanded in recent decades (Wilbur 1973, Pyle et al. 2004, Sauer et al. 2005). The Red-shouldered Hawk has been found recently breeding in Nevada (Floyd et al. 2007) and Oregon (Adamus et al. 2001), outside its historic range. Most relevant to Idaho, *B. l. elegans* has become more regular and numerous in Oregon and Washington in recent years, especially during fall (Mlodinow et al. 2005a, b, 2006a). Subspecies *elegans* is also a rare but regular vagrant in Arizona (Glinski 1982), and of 14 well-supported records for New Mexico, at least two (in winter) apparently represent *elegans* (S. O. Williams pers. comm.). Although an increase in observer effort has certainly contributed to the increase in sightings, Marshall et al. (2003) pointed to a clear range expansion in Oregon. Thus, given the increase in sightings in other western states, the Idaho sightings are not especially surprising. Dispersal of *B. l. elegans* in late summer and autumn is a likely source of Red-shouldered Hawks seen in Idaho, and, indeed, most of the individuals encountered in this study were identified as this subspecies. However, as mentioned above, the bird seen on 28 September 2002 was a juvenile of an eastern subspecies (likely *B. l. lineatus*, from the migratory behavior of that subspecies), marking a first record of an eastern subspecies in Idaho and one of few for the West. Pyle et al. (2004) reported a specimen of an adult female *lineatus* in California (first state record of this subspecies), discussed the lack of records of *lineatus* from west of the Rocky Mountains, and pointed to casual records of *B. l. lineatus* in eastern Colorado during fall migration. Thus, apparently, *B. l. lineatus* is either very rare or simply undocumented in many western states.

In addition to our migration data, the last decade has seen increasing reports of Red-shouldered Hawks during winter months in southwestern Idaho (http://idahobirds.net/ibrc/reviewspecies/kite_crane.html#redshoulderedhawk, accessed 5 August 2007). A similar pattern of increased occurrence in winter has emerged in Oregon and Washington (Mlodinow et al. 2005b). Thus, it appears that this dramatic increase in sightings of the Red-shouldered Hawk in Idaho and surrounding states, during both migration and winter, reflects the recent range expansion and population increase of *B. l. elegans* (Marshall et al. 2003, Sauer et al. 2005) as well as an increase in the number and skill of birders in the field.

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INSECTS PREDOMINATE IN PEREGRINE FALCON PREDATION ATTEMPTS IN ARIZONA

DAVID H. ELLIS, USGS Sonoran Desert Research Station, 125 Biological Sciences East, University of Arizona, Tucson, Arizona 85721 (current address: Institute for Raptor Studies, HC 1 Box 4420, Oracle, Arizona 85623); dcellis@theriver.com

CHARLES T. LaRUE, 3525 West Lois Lane, Flagstaff, Arizona 86001

JAMES K. FACKLER, 5888 Inez Street, Bow, Washington 98232

R. WAYNE NELSON, 4218 63rd Street, Camrose, Alberta T4V 2W2, Canada

ABSTRACT: We compare two methods of collecting data on food habits (observations of predation attempts [*n* = 131] and analysis of prey remains at eyries [*n* = 809]) for Peregrine Falcons (*Falco peregrinus*) in Arizona. White-throated Swifts (*Aeronautes saxatalis*) were pursued in at least 38% of the predation attempts on birds but constituted 22% of the avian diet (by number) from prey remains. Insects constituted 1% of prey remains from eyries but were targets in 69% of observed attacks on prey. Insects, primarily cicadas (Cicadidae), were especially important numerically to breeding females guarding their nest cliffs. These observations suggest that insects may be much more important than formerly supposed in the Peregrine Falcon's diet in other regions when and where large insects are aloft.

Our intent in this study was to document, from observations of hunting attempts, the importance of insects and birds in the diet of Peregrine Falcons (*Falco peregrinus*) in Arizona. In prey remains from Peregrine Falcon eyries in Arizona (Ellis et al. 2004), birds constituted 98% of 809 prey; insects constituted only 1% by number. Even while compiling data for that study, however, we were aware that we had seen insects being pursued much more frequently than the prey remains suggested.

Three previous studies hint that insects sometimes make up a considerable portion of the Peregrine's diet. In 116 stomachs from North America reported by Snyder and Wiley (1976), 20% of the prey items by number were invertebrates. Also, 14% of the regurgitated castings analyzed by Ritchie (1982) from the Yukon River region of Alaska contained insects. More generally, White and Brimm (1990) mentioned scores of cicada (Cicadidae) remains at one eyrie and some grasshopper (Orthoptera) remains at other Peregrine eyries, all in Australia. But how many of the insects in these studies were consumed as gizzard or crop contents of avian prey?

Treleaven (1977:68), Parker (1979:111), Sherrod (1983:47–50), and Dekker (1999:34) reported that recently fledged Peregrines often hunt aerial insects. White and Brimm (1990) saw a yearling Peregrine capture 11 locusts (Orthoptera) in 8 minutes in Fiji. Young falcons of other species also hone their hunting skills on insects (e.g., Beebe 1950). Later, young falcons graduate to avian prey.

By contrast, our observations of Peregrines capturing insects were exclusively of adults. Treleaven (1998:226) also observed a resident adult female Peregrine catching insects in the air in southern England. In Colorado, an incubating female Peregrine ate migrating Mormon crickets (*Anabrus simplex*) as they swarmed past her on the eyrie ledge (Craig and Enderson 2004:36).

Bats were also under-represented in the Arizona prey remains—totally

undetected by Ellis et al. (2004)—but have long been known to be prey of Peregrines in the American Southwest (Stager 1941, Constantine 1948, Glinski 1998, and White et al. 2002). We have also seen Peregrines in Arizona hunting bats. Various authors have noted that mammalian prey go under-detected unless regurgitated pellets are examined (Bradley and Oliphant 1991), but, to avoid other biases, in our earlier paper (Ellis et al. 2004) we did not include pellets in our study of prey remains.

To complete our review of the literature on Peregrine Falcon food habits for Arizona, we note nine other published accounts. Two of these are probably based on observations in Arizona (Tibbits 1990; Glinski 1998). Two others, although purporting to discuss the Peregrine in Arizona, probably based their statements on food habits on what was then known of Peregrine diet elsewhere (Eaton and Smith 1937, Phillips 1947). Limited data on food habits are also available for Arizona from two studies of stomach contents (Fisher 1893, Swarth 1904). White et al. (2002) also listed 20 prey taken in the Grand Canyon of the Colorado River. A few other minor sources for data on food habits were cited by Ellis and Monson (1989) and include pursuit of three ducks, one each of the Killdeer (*Charadrius vociferus*), Mourning Dove (*Zenaida macroura*), and White-throated Swift (*Aeronautes saxatalis*). Ellis (2006) described tactics used by Peregrines to hunt swifts.

Finally, we made an additional 10 observations of Peregrines with prey for which the pursuit was not witnessed. These include three Mourning Doves (plus one additional Mourning Dove and one Band-tailed Pigeon [*Patagioenas fasciata*] observed by Jay H. Schnell), one each of the White-throated Swift and Red-winged Blackbird (*Agelaius phoeniceus*), and five cicadas.

METHODS

From 1975 through 2006, we recorded all observations of Peregrines' predation attempts. Most observations were incidental to our efforts to determine occupancy and productivity at known eyries or to locate new eyries (Ellis 1982, 1988), so most are for the breeding season. A few were from wetlands where prey concentrated. Observations were aided by binoculars and/or telescopes.

In addition to the observations we report here as predation attempts, we also accumulated many observations of Peregrine Falcons attacking ravens (*Corvus corax* and *C. cryptoleucus*), Golden Eagles (*Aquila chrysaetos*), hawks (*Buteo* sp.), Turkey Vultures (*Cathartes aura*), and Prairie Falcons (*F. mexicanus*). Because such attacks have more to do with territorial defense and displacement activity than with predation, none were tallied in this study.

RESULTS

Our list of 131 observed pursuits (Table 1) demonstrates the importance of insects and White-throated Swifts. At least 15 of 40 (38%) attacks on birds were on swifts. Stated differently, 15 of 32 (47%) attacks on identifiable birds were on swifts. We suspect that most or all of the attacks on unidentified small birds (n = 8) were also on swifts, but the distances involved were too great to be certain. In the study of prey remains (Ellis et al. 2004), swifts were also the

Table 1 Observations of Peregrine Falcon Predation Attempts in Arizona, 1975-2006[a]

	Adults: breeding[b]		Fledged young[c]		Immature[d]		Adults: non-breeding		
Prey	CA[e]	SA[f]	CA	SA	CA	SA	CA	SA	Subtotal attempts
White-faced Ibis (*Plegadis chihi*)	1F				1F				2
Large ducks (Anatidae)		1F						1F	2
Shorebirds (Charadriiformes)	2F	2F							4
Band-tailed Pigeon (*Patagioenas fasciata*)			1F						1
Mourning Dove				1F					1
White-throated Swift	2S, 3F	1S, 6F, 2U		1F					15
Flicker (juvenile; *Colaptes* sp.)	1S								1
Horned Lark (*Eremophila alpestris*)	1F								1
Swallows (Hirundinidae)		3F		3					
Pinyon Jay (*Gymnorhinus cyanocephalus*)	1F								1
Red-winged Blackbird (*Agelaius phoeniceus*)	1F								1
Unidentified sparrow-size bird		3S, 3F, 2U							8
Cicada		40S, 1F							41
Unidentified insect		36S,							50
Bird totals	3S, 9F	4S, 16F, 4U	2F	1F				1F	40
Insect totals		76S, 7F, 8U							91

[a]Attacks recorded as successful (S), failed (F), or success unknown (U). Some failed attacks likely resulted in the injury or death of the prey.

[b]Although some Peregrine Falcons occupy their breeding cliffs in Arizona year round, we define the interval for this category as 1 March–1 September.

[c]Defined as from fledging in summer to 31 December.

[d]Completely or mostly in juvenal plumage in second calendar year.

[e]CA, cooperative attack.

[f]SA, solo attack.

most important bird numerically (172 of 773 identifiable birds; 22%). Only 3 of the 13 (23%) most clearly observed attacks on swifts were successful.

Although we witnessed 91 attacks on insects, we were confident of the insect's identity in only 41 attempts (all on cicadas). In our tally from prey remains (Ellis et al. 2004), only two of nine insects were cicadas. All attacks occurred high in the air (normally 200 m or more aloft). Of 71 attacks where the sex of the predator could be specified, nearly twice as many (47) were by adult females; the remainder (24) were by adult males.

DISCUSSION

The discrepancy between the importance of insects in prey remains (9 of 809 prey, 1%: Ellis et al. 2004) and their importance from observations of hunts (91 of 131 predation attempts; 69%) in Table 1 requires some explanation. First, to make a conservative tally of prey remains from eyries, we excluded insect fragments (knowing that they could have come from stomach and crop contents of avian prey) and tallied insects as prey only when we found large undamaged wings (e.g., from cicadas) or intact large hind legs (from locusts).

Second, a bias in the data from the hunting observations stems from the fact that approximately 90% of our observations were made from vantage points near eyries during the breeding season. This resulted in our being much more likely to see hunting efforts by adult females because it was the females that usually remained on guard in the immediate vicinity of the eyrie. Some of the feeding bouts on insects probably represented attempts by adult females to feed on whatever was available while awaiting the male's return with more substantial prey.

Evidence that Peregrines view insects as inferior prey comes from three observations. (1) We never saw adult male falcons deliver insects to their mates, even on the six captures when adult females were nearby. (2) We never saw an adult female solicit insect prey from her mate. By contrast, males in Arizona, as elsewhere, when arriving with avian prey, are consistently solicited by adult females with loud vocalizations and often vigorous visual displays. (3) We only once saw an insect delivered to nestlings.

All 91 attempts at insects occurred in 11 bouts. Attacks on insects were observed only when migratory or mating swarms of insects were aloft. Insects were easy prey: unlike attacks at birds, stoops at insects were never high speed or repeated. Typically a falcon made only one shallow, brief (20–100 m) stoop, followed by an insignificant upward swoop, terminated by forward thrusting of the feet to grasp the insect (Figure 1). Misses never resulted in a repeat attempt at a missed insect; rather, the falcon proceeded forward in the airstream to the next potential prey.

Rates of hunting success, based on observations whose outcome was certain, were 19% for avian prey (7 of 36 attempts) and 92% for insect prey (76 of 83), for a combined rate of 70% (83 of 119). From 16 studies evaluated by Roalkvam (1985), the Peregrine's capture success for avian prey varied from 7% to 83%. In the breeding season, hunts by adults averaged 34.9% successful; in the nonbreeding season, adults averaged 12.7% and immatures averaged 7.3% successful. There are so many variables from study

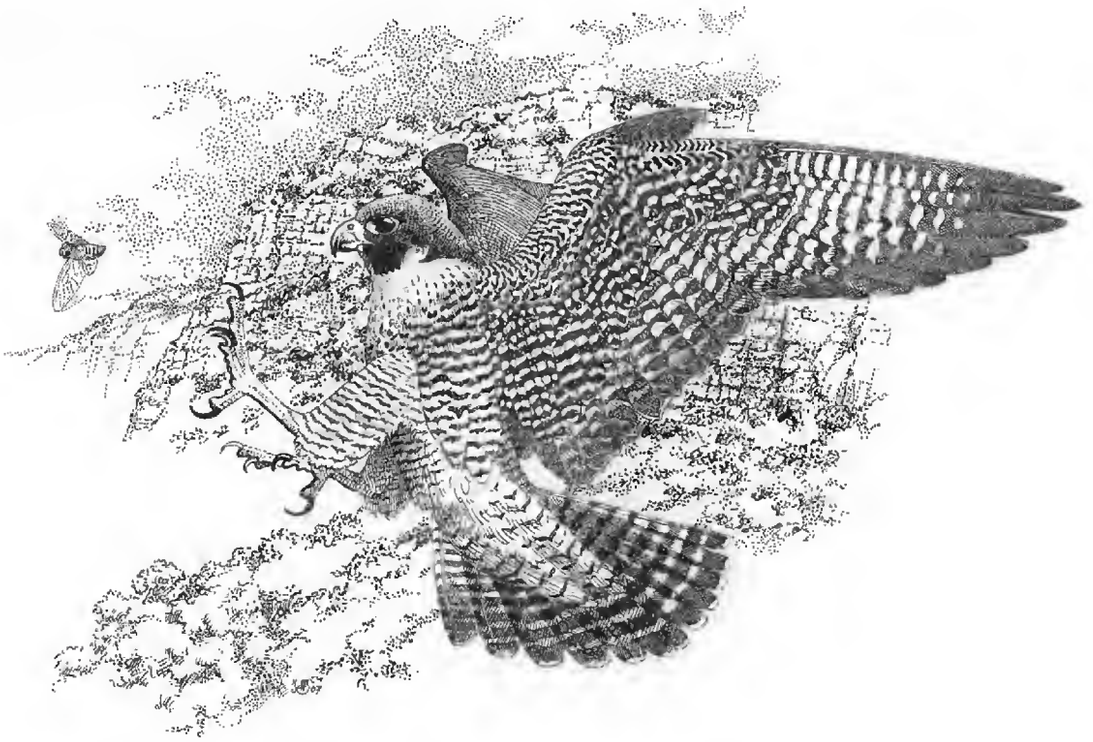

Figure 1. Adult female Peregrine Falcon pursuing a cicada.

Illustration by John Schmitt

to study, however (e.g., prey type, habitat type, season, level of motivation of the falcon, etc.), that cogent comparisons and clear conclusions are nigh impossible. Obviously, elusive quarry would have lower capture rates, while rates for large, less maneuverable insects, likely the easiest of all aerial prey to capture, would be much higher.

Although we have seen Peregrines approaching and/or attacking bats on several occasions, we did not include these observations in Table 1 because darkness made uncertain both the number of and the success of most attacks. Even when a predation attempt was observed from a distance of only 200 m, it proved impossible, in the fading light, to tell how many times the falcon actually tried to capture a bat as the falcon flew again and again, through and around, the swirling column. Captures were somewhat easier to count but only when the falcon flew to an observable perch and consumed the prey. It will require special equipment and a concerted effort to document bat predation adequately.

This study hints at the importance of cooperative hunting: one-third of attacks on birds by breeding adults were cooperative. The study also demonstrates how vastly different the estimates of diet can be when different methods are used: most importantly, insects represented only 1% of prey by number in remains at eyries (Ellis et al. 2004) but 69% of prey by number in observations of hunts. We suggest that quantitative observations of predation in other populations will show that insects are sometimes important to this obligate ornithophage.

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COLONIZATION OF THE BROWN BOOBY AT THE CORONADO ISLANDS, BAJA CALIFORNIA, MEXICO

DARRELL L. WHITWORTH, HARRY R. CARTER, and JOSH S. KOEPKE, California Institute of Environmental Studies, 3408 Whaler Avenue, Davis, California 95616 (Carter's contact address: Carter Biological Consulting, 1015 Hampshire Road, Victoria, British Columbia V8S 4S8, Canada); darrellwhitworth@vodafone.it

RICHARD J. YOUNG, Department of Wildlife, Humboldt State University, Arcata, California 95521

ABSTRACT: In 2005, we documented the colonization of Middle Rock, Coronado Islands, Baja California, Mexico by the Brown Booby (*Sula leucogaster brewsteri*)—a significant northern extension of the species' breeding range possibly related to warming trends in the northeastern Pacific Ocean. Confirmed nesting in 2005 was preceded by an increase in sightings at sea along the northwest coast of Baja California and California in the 1990s and early 2000s and attendance at Middle Rock since at least 2002. In 2002, we observed Brown Boobies on Middle Rock in incubation postures attending two Western Gull (*Larus occidentalis*) nests containing one gull egg each. One of these gull nests was attended for at least 33 days at the exact site where a single Brown Booby nest was confirmed each year from 2005 to 2007. In 2005 the nest successfully fledged a chick but in 2006 failed for unknown reasons. In 2007, two nests fledged single chicks. Excluding juveniles, documented attendance of at least 6 boobies in 2002, 7 in 2006, 12 in 2006, and 35 in 2007 suggests that the colony will grow further.

The Brown Booby (*Sula leucogaster*) has a pantropical distribution with multiple subspecies, including *S. l. brewsteri*, which breeds on islands in the eastern tropical Pacific from the northern Gulf of California south along the Pacific coast of Mexico, including the Revillagigedo Islands (Bent 1922, Howell and Webb 1995, Schreiber and Norton 2002). Before 2005 no breeding had been noted at the Coronado Islands or elsewhere along the Pacific coast of Baja California. In this article we describe our observations of Brown Boobies at the Coronado Islands from 2002 to 2007, briefly discuss this range expansion in the northeastern Pacific Ocean, and attempt to explain unusual nesting behaviors in 2002.

STUDY SITE AND METHODS

We recorded Brown Boobies incidentally during studies of Xantus's Murrelet (*Synthliboramphus hypoleucus*) and other breeding seabirds at the Coronado Islands (32° 25′ N, 117° 15′ W; hereafter "Coronados") April–June 2002, March–November 2005, April–July 2006, and March–July 2007 (Hamilton et al. 2006, Whitworth and Carter unpubl. data). The Coronados lie near the United States–Mexico border, approximately 11 km west of Tijuana, Mexico, and 24 km southwest of San Diego, California (Figure 1). We observed Brown Boobies only on Middle Rock, the smallest and lowest (maximum elevation 30 m) of the four Coronado Islands. The breeding seabird fauna of the Coronados comprises the Black (*Oceanodroma melania*), Leach's (*O. leucorhoa*), and Ashy (*O. homochroa*) Storm-Petrels,

Figure 1. Location of the Coronado Islands off the northwest coast of Baja California, Mexico, in relation to principal breeding colonies (marked with asterisks) of the Brown Booby in northwestern Mexico.

Brown Pelican (*Pelecanus occidentalis*), Double-crested (*Phalacrocorax auritus*), Brandt's (*P. penicillatus*), and Pelagic (*P. pelagicus*) Cormorants, Western Gull (*Larus occidentalis*), Xantus's Murrelet, and Cassin's Auklet (*Ptychoramphus aleuticus*) (Everett and Anderson 1991). Middle Rock annually hosts small colonies of the murrelets, gull, and Black and Ashy Storm-Petrels, and in some years also hosts small colonies of the pelican and Brandt's and Pelagic Cormorants.

We visited the Coronados once per month in 2002 and every two to four weeks in 2005, 2006, and 2007, with each visit lasting one to four days. During each trip, we landed on Middle Rock for at least one hour. We inspected booby nests (briefly flushing adults) on a few occasions to establish contents and take photographs.

We referred to Harrison (1983) for aging and sexing Brown Boobies. We distinguished adult males from adult females by their white head, characteristic (in varying degrees) of all eastern Pacific subspecies of the Brown Booby.

RESULTS

2002 Observations

On 6 April, we first observed six Brown Boobies (three males, two females, and one subadult), roosting on a steep slope about 15 m above the landing point on the east shore of Middle Rock. Most of them spent the morning

and early afternoon roosting on this slope; we noted no obvious nests or breeding behaviors. Western Gulls were also on Middle Rock on this day, but we found no nests. On 17 May, on the same slope where we saw the birds roosting in April, we noted several boobies, including one male and one female, in incubating posture on two gull nests about 4 m apart and 3–4 m above the ledges where the other boobies were roosting (Figure 2). Both individuals flushed during our efforts to photograph the nests from above, revealing a single Western Gull egg in each nest (Figures 2 and 3). Western Gull and Brown Booby eggs are of similar size but colored differently: Brown Booby eggs have a uniform pale shell coated with a dull white chalky deposit (Figure 4), whereas Western Gull eggs are heavily mottled on a dark olive-brownish background (Figure 2). Each nest consisted of a scrape lined with dry vegetation, although one nest (A) contained more vegetation and appeared more intact than the other (B; Figure 3). The female returned to nest A soon after we left and resumed an incubation posture, while a male returned to nest B but did not immediately resume an incubation posture. Since boobies incubate eggs with their feet (Nelson 1978), we could not determine if the attending boobies were attempting to incubate the gull eggs. We did not see boobies standing above the eggs to cool them, as done during incubation in warmer climates. Later that day, a male took over attending nest A, also assuming an incubation posture. An "incubating pair" was also observed at the same location on 18 May (R. A. Erickson pers. comm.). On

Figure 2. Adult female Brown Booby in incubation posture on Western Gull nest A at Middle Rock, Coronado Islands, 17 May 2002. Inset: Western Gull egg in nest.

Photos by Darrell L. Whitworth

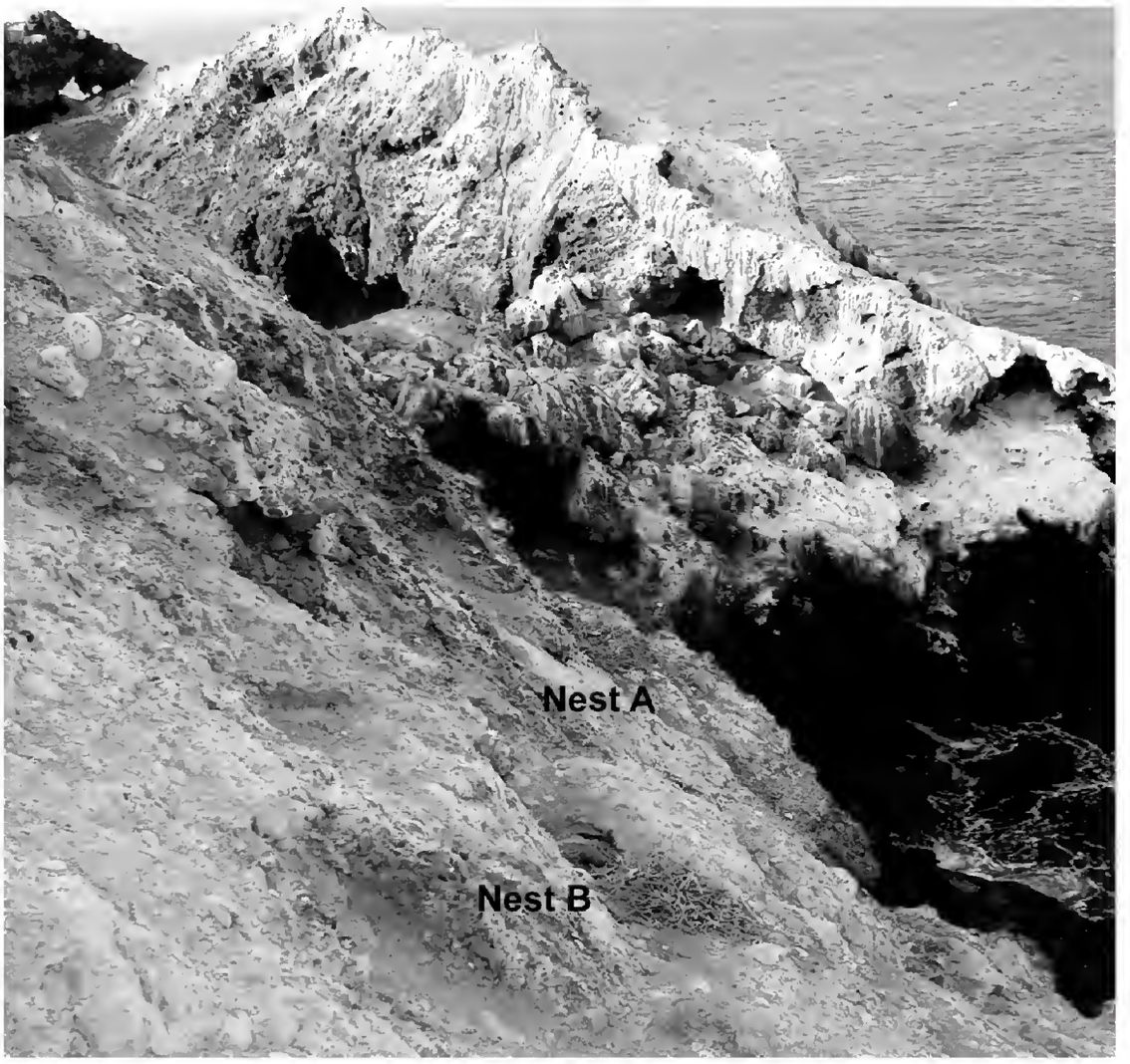

Figure 3. Two Western Gull nests attended by Brown Boobies at Middle Rock, Coronado Islands, 17 May 2002 (nest B foreground; nest A background).

Photo by Darrell L. Whitworth

19 June, our last survey in 2002, several Brown Boobies were again roosting on the same slope, and a female was again observed in incubation posture at nest A. There were no birds at or near nest B, where the egg and most nest material were gone. We inspected nest A, but the egg did not appear to be viable—its contents appeared to be liquid when the egg was rolled in the hand. The pair of boobies was strongly attached to nest A, allowing us to approach within 1 m of the nest before flushing and circling to within a few meters of the site while we were present.

2005 Observations

On 23 and 24 March, we observed an adult female Brown Booby incubating a two-egg clutch of Brown Booby eggs (Figure 4), with an attending male standing nearby, in the exact location of nest A in 2002. Another four boobies (two males, one female and one subadult) were roosting in the shade on lower ledges. There was no evidence of activity at nest B. On 4 April, a female was in incubation posture at nest A, but we did not view the nest's

Figure 4. Two-egg clutch in Brown Booby nest A on Middle Rock, Coronado Islands, 24 March 2005.

Photo by Darrell L Whitworth

contents. On 18 April, a single small to medium-sized downy chick was in the nest and being brooded by an adult male (Figure 5A), but the second egg or chick was missing. Fratricide is common in the Sulidae (Nelson 1978), and we suspect that the second egg hatched and the younger chick was ejected by the older sibling and killed or scavenged by Western Gulls. On the basis of the chick's size and an incubation period of 42–47 days (Dorward 1962, Nelson 1978, Schreiber and Norton 2002), the egg was likely laid in early February and hatched in late March. On 16 May, a female was attending a large downy chick at nest A, but most nest material had disappeared (Figure 5B). By 19 June, the chick had acquired juvenal plumage but some down still adhered to its head. Boobies continued roosting on Middle Rock subsequently, with the high count for 2005 of seven birds (four males, two females, and one subadult, excluding the juvenile) on 19 September. Six birds were still present on 19 October, our last survey in 2005.

Figure 5. Downy Brown Booby chick in nest A at Middle Rock, Coronado Islands, in 2005: (A) adult male brooding chick on 18 April; and (B) adult female attending chick on 16 May, with nest material missing.

Photos by Darrell L. Whitworth

2006 Observations

On 11 and 12 February, when as many as seven Brown Boobies were around the island, a pair was rebuilding nest A, (M. J. Billings and G. McCaskie pers. comm.). On 23 April, an incubating female and attending male were at nest A, and eight other birds (three males, three females, and two subadults) were roosting on the ledges below. On 24 April, we briefly flushed the female and found one egg. On 7 May, a female was observed in incubation posture on nest A and six other roosting birds (three adult males, one subadult male, and two other subadults) were nearby. On 22 May, a female was again observed in incubation posture on nest A with three other birds roosting on lower ledges nearby. On 5 June, eight individuals were roosting near nest A, but the nest materials had disappeared and no boobies were attending the site. We found no broken eggs or dead chicks nearby, although there was an empty gull nest (not at nest B) upslope. Although we could not determine if or when hatching occurred at nest A, observations suggest incubation lasted at least 29 days. The egg may have been laid about 23 April when one egg was seen or, if only one egg was laid, this egg may have been laid earlier in April. Thus the egg may have hatched before the nest failed. On 19 June, we recorded the high count for 2006 of 12 boobies (four males, four subadult males, three females, and one subadult or adult female), eight on the shaded lower ledges below the nest and four on shaded ledges about 50 m north on the east side of Middle Rock. A standing pair (adult male and adult female) of boobies passed a feather back and forth, a reported courtship behavior (Nelson 1978). On 23 July, our last survey in 2006, we noted 10 boobies.

2007 Observations

On 25 March, two nests were attended by females in incubation postures: nest A (same location as used in 2002, 2005, and 2006) and nest C (located farther downslope within a hollowed grotto below and to the right of the lower roosting ledge). Nest C was within 5 m of a path we used to reach our plots for monitoring murrelets. Twenty-nine boobies were present, including 10 females, 8 males, and 11 subadults. We observed one billing male–female pair and one allopreening male–male pair, but no nest or nesting material was evident nearby. In addition, one adult Blue-footed Booby (*Sula nebouxii*) was roosting in association with the Brown Boobies (Figure 6). On 29 April, a medium-sized downy chick was visible at nest C but an adult in incubation posture was noted at nest A. On 13 May, both nests had downy chicks but the chick in nest C was close to adult size with some flight feathers visible, whereas the chick in nest A was all downy. The egg in nest C was apparently laid in mid February and hatched in early April, while the egg in nest A was apparently laid in mid to late March and hatched in early May. On 26 May, we counted a total of 25 boobies. The chick in nest C had grown most of its juvenal plumage but had some down remaining on the wings, neck, and legs and was still attended by a pair of adults. The chick in nest A was still mostly downy and was brooded by the adult female. On 24 June, we recorded the high count for 2007 of 35 Brown Boobies (27 adults, 8 subadults) and one adult Blue-footed Booby (roosting with the Brown Boobies). The chick at

Figure 6. Adult Blue-footed Booby roosting at Middle Rock, Coronado Islands, 25 March 2007.

Photo by Ian Austin

nest C was fully feathered but still had a small amount of down on the back. This chick was roosting with an attending adult female on rocks below the nest site and did not fly or move away when we approached within 1 to 2 meters, although the female departed. This chick and attending adults did not react when we used the path near the nest during earlier trips in 2007. The chick at nest A also was fully feathered (but with some down on the head) and was attended by a pair of adults passing a stick back and forth near the nest site. On 21 July, our last survey in 2007, about 30 Brown Boobies were present, including both juveniles, but the nest sites were not attended and no nest materials were evident.

DISCUSSION

The Brown Booby's breeding at the Coronados represents a considerable northern extension of its breeding range in the northeast Pacific Ocean. Like other subspecies of the Brown Booby, *S. l. brewsteri* has tropical and subtropical affinities, and recent warming trends in ocean waters may have

assisted the northward extension of its breeding range. Warming of the northeastern Pacific has been associated with changes in species composition and abundance of plankton, fish, and seabirds in the California Current (Roemmich and McGowan 1995, Veit et al. 1996, Field et al. 2006). Changes in the distributions and breeding ranges of marine birds might be one consequence of ocean warming related to global climate change (Crick 2004). Brown Boobies have not yet colonized other suitable islands along the Baja California coast, however, suggesting that breeding at the Coronados might instead be an anomalous response to locally abundant prey and low levels of human disturbance at suitable nesting habitats. Future observations may assist interpretation of why the Brown Booby first colonized the Coronados rather than other potential nesting sites farther south along the Pacific coast of Baja California. We note that since 2002 South Coronado Island has been the site of a relatively large tuna farm, which may have contributed in some way to this colonization, but otherwise no major changes have occurred at Middle Rock in the last decade.

The Brown Booby colony nearest the Coronados is in the northern Gulf of California at Consag Rock, over 300 km away across the mountainous northern section of the Baja California peninsula (Figure 1; Bancroft 1927, Schreiber and Norton 2002). Farther south, colonies of *S. l. brewsteri* lie at least 1400 km away in the offshore Revillagigedo Archipelago, the southern Gulf of California, and off the Mexican states of Nayarit and Guerrero (Everett and Anderson 1991, Howell and Webb 1995, Pitman and Ballance 2002, Schreiber and Norton 2002).

Until the 1990s, Brown Boobies were seldom seen along the west coast of Baja California. They were not observed during visits to the Coronados in the early 20th century (Grinnell and Daggett 1903, Osburn 1909, Wright 1909, Howell 1910, Stephens 1921) or other western Baja California islands (Kaeding 1905, Willett 1913, Wright 1913, van Denburgh 1924, Lamb 1927). Prior to 1950 they were observed off the west coast of Baja California very infrequently (Huey 1924, 1935; van Rossem 1945). At the Coronados, Jehl (1977) listed the Brown Booby as accidental in the 1970s, and it was not observed during several trips to the islands 1977–79, 1986–89, and 1996–98 (D. W. Povey in litt.) or at Middle Rock 1989–91 (W. T. Everett pers. comm.).

Breeding at the Coronados was preceded by a marked increase in frequency of northern sightings. In the 1980s, Brown Boobies began to be seen more frequently off California, with annual sightings since 1990 and an injured nearly adult male recovered on the beach at Imperial Beach, 20 km northeast of the Coronados, 2 April 1990 (San Diego Natural History Museum 46566, California Bird Records Committee 2007). Several sightings were made in northwestern Baja California prior to 2002, including at the Coronados in 1999 and 2001 and at the Todos Santos Islands in 1993, 2000, and 2001 (Palacios and Mellink 2000; R. A. Erickson unpubl. data). In addition to our observations in 2002, F. Gress and E. Palacios (unpubl. data). saw Brown Boobies on Middle Rock repeatedly in spring from 2002 to 2004 but noted no nests. Breeding at nest A from 2005 to 2007 likely indicated strong attachment to this exact site and territory 2002–04. Futhermore, the presence of subadult boobies on Middle Rock from 2005 to

2007 suggests that successful but undocumented breeding may have taken place in 2003 and 2004.

In 2002, prolonged "roosting" (at least 33 days) on usurped or adopted gull nests may have represented either territorial behavior by nonbreeding adults that stimulated or contributed to development of breeding behavior in subsequent years or undocumented unsuccessful nesting by breeding adults in 2002 with subsequent adoption or usurping of nearby gull nests. In seabirds adoption of eggs or nests is uncommon within a species and even more rare between species (Carter and Spear 1986, Hébert 1988, Gaston et al. 1993). "Reproductive errors" (Plissner and Gowaty 1988), however, have sometimes been noted after the loss of a nest or brood. Parental instincts are strong innate behaviors that sometimes can be directed toward inappropriate subjects, and such "misplaced" reproductive behaviors have been noted in the Sulidae previously. Brown and Blue-footed Boobies have been observed incubating large pebbles and small rocks at colonies in the Gulf of California (Mellink 2002). Bent (1922) reported Masked Boobies incubating "large sea shells which in shape and size somewhat resembled their eggs" and tending for prolonged periods sea shells placed in nests as surrogates for collected eggs. Incubation of foreign egg-shaped objects or "pseudo-eggs" in the Laridae and Sulidae is thought to result from behaviors intended to retrieve displaced eggs (Conover 1985, Mellink 2002).

Brown Boobies lay eggs on the bare ground but often line nest edges with sticks, vegetation, and rocks to prevent eggs from rolling out of nests (Bent 1922). At the Coronados, the nest materials and structures varied considerably each year (Figures 2 and 3), but substantial nest structures were evident each year. While gulls apparently built the nests in 2002, boobies built extensive nests in 2005, 2006, and 2007, using quite varied nest materials with much seaweed. Nest materials also disappeared during the breeding season in 2005, 2006, and 2007, indicating that nests were rebuilt each year.

Successful fledging of chicks plus increasing numbers of adults and subadults attending Middle Rock from 2005 to 2007 suggests that this colonization by Brown Boobies will lead to greater numbers of nesting birds and development of a long-term breeding colony in the future. Colony attendance without breeding by a Cory's Shearwater (*Calonectris diomedea*) from 2005 to 2007 (Hamilton et al. 2006, Carter and Whitworth unpubl. data) and a Blue-footed Booby in 2007 also may signal increased future use of the Coronado Islands by other seabird species.

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AN APPARENT HYBRID BREWER'S × BLACK-CHINNED SPARROW

PHILIP UNITT, San Diego Natural History Museum, P. O. Box 121390, San Diego, California 92112-1390; birds@sdnhm.org

ABSTRACT: An apparent hybrid between the Brewer's and Black-chinned Sparrows, found in the Cuyamaca Mountains, southern California, in 2007, was closest in plumage to Brewer's Sparrow but outside that species' range of variation. It sang intermediate songs. The bird, and two other possible hybrids, occurred in areas extensively burned in 2002 and 2003. In these areas the numbers of the Black-chinned Sparrow increased spectacularly following the fires and Brewer's Sparrow occurred in the breeding season sporadically, outside its historic breeding range.

Man-made environmental change is one factor that contributes to the breakdown of reproductive isolating mechanisms between species and subsequent hybridization (Mayr 1963). For example, in the eastern United States, agriculture and urbanization, which favor the Mallard (*Anas platyrhynchos*) over the American Black Duck (*A. rubripes*), have led to those species' hybridization (Longcore et al. 2000). Deforestation followed by maturation of second-growth forest on abandoned farmland has contributed to the contact and well-known hybridization between the Blue-winged (*Vermivora pinus*) and Golden-winged (*V. chrysoptera*) Warblers (Confer 2006). Here I report an apparent hybrid between the Brewer's (*Spizella breweri*) and Black-chinned (*S. atrogularis*) Sparrows, a previously unknown combination encountered in a habitat changed following massive wildfire.

In 2002 and 2003 southern California was swept by fires of a size unprecedented since fire officials began keeping accurate records in the early 20th century. Over 1914 km^2 of San Diego County burned, representing 17.4% of the county's total area and nearly 25% of the area still covered by natural vegetation. The Cedar Fire of October 2003, the largest single mapped fire in California since the beginning of accurate records on such fires in 1910, burned 1132 km^2, including nearly all of the Cuyamaca Mountains. To assess the effects of the fires on birds, I established 46 survey routes, including five in the Cuyamaca Mountains within Cuyamaca Rancho State Park. Volunteers and I covered the routes four times during each breeding season between 15 April and 15 July as well as three times during the winter.

OBSERVATION

On 19 May 2007 Peter D. Shaw and I were walking one of the survey routes, which runs from Highway 79 southwest up the West Mesa Fire Road then north along the Fern Flat Trail to Azalea Spring. Near the junction of the West Mesa and Fern Flat trails, in the saddle between West Mesa and Arrowmakers Ridge at an elevation of 1400 m (32.935° N, 116.572° W), we heard a peculiar variation of the Black-chinned Sparrow's "bouncing ball bearing" song. Each note had a trilled quality to it, and the rapid trill at the end of the song trailed off into 1 to 1.5 seconds of tinkling notes resembling a Brewer's Sparrow's song. The effect was the pattern of a Black-chinned

Sparrow's song overlaid over the quality of a Brewer's Sparrow's song. The bird repeated this variation several times, then performed a more typical Black-chinned Sparrow song several times, then reverted to the atypical song. It alternated the two song types repeatedly over the 20 minutes in which we watched it.

In plumage, however, the bird was much more like a Brewer's Sparrow. The crown, nape, and back were finely streaked with blackish on a sandy brown background (grayer on the central crown stripe and nape). The back had none of the rufous typical of the local subspecies *Spizella atrogularis cana* of the Black-chinned. The wing feathers were also edged with the same sandy buff color typical of Brewer's Sparrow. There was a pale gray supercilium, but the sides of the head were a nearly unmarked dingy gray. Photos show a slight browner outline of the ear coverts that was not obvious in the field. The bird lacked both the malar pattern of Brewer's Sparrow and the black chin of a male Black-chinned Sparrow. The underparts were light gray, looking paler than typical of the Black-chinned but grayer than the pale sand color of Brewer's. The bill was conspicuously pale yellowish pink (with a tiny dusky tip), yellower than a Black-chinned Sparrow's bill but much more brightly colored than the neutral brownish bill of a Brewer's Sparrow. The tarsi were orangish pink.

The combination of features of the plumage, bill color, and song suggest that the bird was a hybrid. Because the plumage was closer to that of Brewer's Sparrow, another possibility is that the bird was a Brewer's Sparrow that learned the song of the Black-chinned. The degree to which the song of Brewer's Sparrow is learned or innate is unknown; the degree of individual variation in the species suggests that learning contributes significantly, as in other sparrows. The sparrows vary from species to species in the degree to which the song is learned more flexibly, as in the Song Sparrow (*Melospiza melodia*), or is more constrained genetically, as in the Swamp Sparrow (*M. georgiana*; Marler and Peters 1988). Thus the song alone cannot specify a hybrid origin. Even though the bird's plumage was closer to that of a Brewer's Sparrow, the lack of malar stripes, the near lack of patterning on the sides of the head, and the purely gray underparts (without brownish) put the apparent hybrid outside the range of variation in 157 specimens of Brewer's Sparrow in the collection of the San Diego Natural History Museum. Also, the yellowish pink color of the apparent hybrid's bill was outside the range of variation in bill color of Brewer's Sparrow, in my experience.

Suspecting that no hybrid between the Brewer's and Black-chinned had been reported previously, I was eager for more definitive documentation. Fortuitously, while Shaw and I were studying the bird, Janet Franklin, Linnea A. Spears-Lebrun, and Heather L. Schmalbach came up the West Mesa Fire Road for their study of plant succession in the area. I asked if anyone had a camera or recording equipment, and Spears-Lebrun had a digital movie camera that recorded sounds. She kindly took several seconds of video of the bird that captured the unusual song. Still wanting better photos and recordings, however, for the next run of the route on 9 June 2007 I asked Timothy Burr to join me with recording equipment designed for birds and Thomas A. Blackman to join me with a camera and telephoto lens. Fortunately, we found the hybrid sparrow again, singing just a short distance farther up the

trail from where it had been on 19 May (Figure 1). The bird spent much of its time on exposed perches in burned trees, above the tops of the shrubs of *Ceanothus palmeri*, allowing Blackman to get numerous photos (e.g., Figures 2, 3). Likewise, the bird spent most of its time singing, allowing Burr to record over 20 minutes of song (Figure 4; can be heard at www.sdnhm.org/research/birds/hybrid.html). On 9 June the hybrid sparrow sang further variations we had not heard on 19 May, such as a series of three to five trilled notes given in the cadence of the first three notes of the Black-chinned Sparrow's song but truncated after that. It did not appear to be mated. On 30 June Philip K. Nelson and I could not relocate the hybrid, but on that date the singing of the Black-chinned Sparrows had nearly ceased, in parallel with the fledging of many of their broods.

Brewer's Sparrow has reportedly hybridized with the Clay-colored Sparrow (*Spizella pallida*; Suchetet 1897, Cockrum 1952) and Chipping Sparrow (*S. passerina*; Pyle and Howell 1996). But according to McCarthy (2006) no hybrids involving the Black-chinned Sparrow are known previously, and the combination I report here is new.

OTHER POSSIBLE HYBRIDS

Paul D. Jorgensen and Steve Jorgensen may have encountered another hybrid Brewer's × Black-chinned Sparrow on 17 May 2007 while covering

Figure 1. Burned forest at the site of the hybrid Brewer's × Black-chinned Sparrow in Cuyamaca Rancho State Park, California, 9 June 2007. Shrubs are *Ceanothus palmeri*, after four years grown to the height of a man (Blackman, Burr, and Unitt in photo for height comparison).

Photo by James K. Wilson

Figure 2. Hybrid Brewer's × Black-chinned Sparrow in Cuyamaca Rancho State Park, California, 9 June 2007. Note bright yellowish pink bill, pale supercilium, and uniform grayish cheek and underparts.

Photo by Thomas A. Blackman

Figure 3. Upperparts of Brewer's × Black-chinned Sparrow in Cuyamaca Rancho State Park, California, 9 June 2007. Note streaked crown and nape and sandy brown background color of the crown and back. From this view the bird does not look clearly different from a pure Brewer's Sparrow.

Photo by Thomas A. Blackman

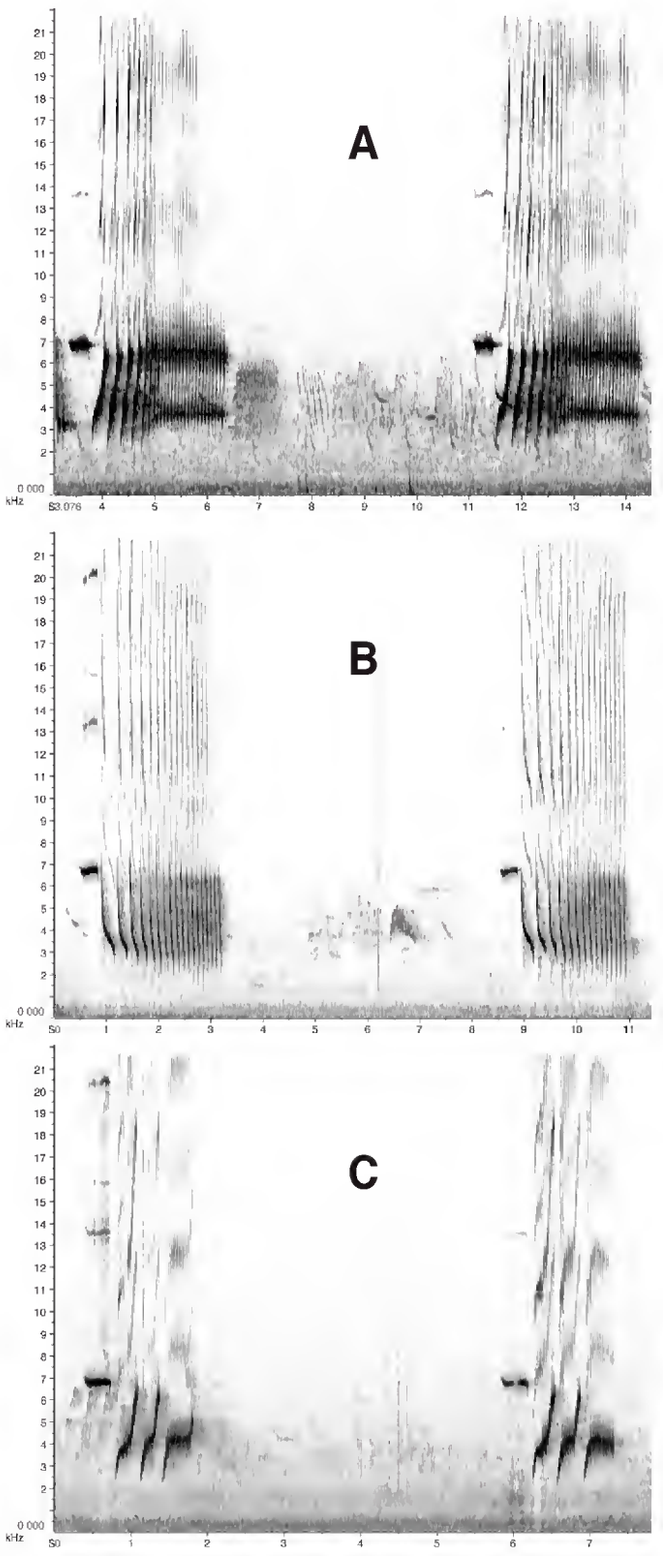

Figure 4. Some songs sung by the hybrid Brewer's × Black-chinned Sparrow in Cuyamaca Rancho State Park, California, 9 June 2007. A, Most frequent song, in which the pattern of the Black-chinned's song seems overlaid over the quality of a Brewer's song. Note the layers of harmonics in the terminal trill, as in Brewer's but not as in the Black-chinned. B, Song resembling a typical Black-chinned Sparrow's song, with the terminal trill shortened. C, Song consisting of three trilled notes in the cadence of the first three notes of a typical Black-chinned Sparrow's song. Again, note the harmonics. To hear 2 minutes, 50 seconds of the bird singing various variations, go to www.sdnhm.org/research/birds/hybrid.html.

Recordings by Timothy Burr

another of our fire-study routes, on Middle Peak in Cuyamaca Rancho State Park. Their initial impression was that the bird was a Brewer's but with a yellow bill and crown less streaked than typical for that species. Unfortunately, that bird was seen only briefly and was not singing.

Yet another possible hybrid Brewer's × Black-chinned Sparrow was found on 20 May 2005 by Lori J. Hargrove. The site was at 1460 m elevation near the head of Oriflamme Canyon on the east slope of the Laguna Mountains in an area burned in the Pines Fire of 2002. Hargrove was not able to approach the bird closely enough to be able to describe the plumage thoroughly, but it was a plain sparrow resembling a Brewer's Sparrow (head marked faintly with a pale malar stripe, pale throat, whitish eye ring, and pale median crown stripe) but with a bright orange bill. Its song, repeated incessantly, "was a series of 6 to 14 very high-pitched, plaintive, even notes that descended in pitch slightly, then turned into a dry rattle-trill.... In pattern it was reminiscent of a Canyon Wren or Black-chinned Sparrow, and the notes and rattle were very delicate, like the tone of a Brewer's Sparrow" (L. J. Hargrove pers. comm., 20 May 2005). A few Brewer's Sparrows as well as abundant Black-chinned Sparrows were in the vicinity that spring.

ENVIRONMENTAL CONTEXT

The higher elevations of the Cuyamaca Mountains, part of the Peninsular Ranges, were formerly covered with a forest dominated by the Jeffrey Pine (*Pinus jeffreyi*), Coulter Pine (*P. coulteri*), Incense Cedar (*Calocedrus decurrens*), White Fir (*Abies concolor*), Black Oak (*Quercus kelloggii*), Coast Live Oak (*Q. agrifolia*), and Canyon Live Oak (*Q. chrysolepis*). The Cedar Fire burned over 90% of this forest completely, consuming the canopy and leaving only a few small unburned or partially burned enclaves. Since the fire, most of the live oaks have resprouted from their branches and many of the Black Oaks have resprouted from their bases. But regeneration of conifers from seeds has been extremely low, except very locally for the Incense Cedar adjacent to incompletely burned trees (Franklin et al. 2006). Following a rapid flush of short-lived fire-following specialists, recovery of the vegetation has been dominated overwhelmingly by the shrub *Ceanothus palmeri*, with the California Rose (*Rosa californica*) and Blue Elderberry (*Sambucus mexicana*) also proliferating (Franklin et al. 2006). Thus the stage has been set for an avifauna typical of coniferous forest to be replaced by one typical of chaparral and oak woodland.

The Black-chinned Sparrow has been one of the primary birds exploiting the burned areas, both chaparral and former forest. Though common before the fire in chaparral, it was absent from forest, including the site of the apparent hybrid. Along the five Cuyamaca study routes it increased significantly each year from 2003 to 2007, by 2007 becoming the seventh most abundant species in the burned forest. In the chaparral-dominated habitat at lower elevations around the Cuyamaca Mountains this species became even more prevalent following the fires. Just to the east of Cuyamaca, in the area primarily along the east slope of the Peninsular Ranges burned in the Pines Fire of 2002, it increased rapidly, becoming the third most abundant bird by 2005 and maintaining its numbers through 2007. On the west slope of the

Cuyamaca Mountains, along three survey routes in the Cleveland National Forest through chaparral burned in the Cedar Fire, the Black-chinned Sparrow was the second-most abundant bird (after the Lazuli Bunting, *Passerina amoena*) in 2005 and the most abundant bird by far in 2006 and 2007, maintaining its numbers after the bunting declined (unpubl. data).

Response to the fires by Brewer's Sparrow has been more complex. The species nests primarily in the Great Basin but also locally in the San Gabriel (K. L. Garrett in McCaskie 1995), San Bernardino, and San Jacinto (Grinnell and Swarth 1913) mountains of southern California. Former nesting habitat at low elevations in cismontane southern California (Simi and San Fernando valleys, Los Angeles County; Etiwanda and Highlands, San Bernardino County; Willett 1933) has now been nearly eliminated by agricultural and urban development, although R. L. McKernan reported a nest with eggs at Winchester, southwestern Riverside County, 13 May 1992 (McCaskie 1992). For San Diego County, Stephens (1919) wrote vaguely that a few Brewer's Sparrows bred on the eastern slope of the Peninsular Ranges and collected a specimen at 1830 m (6000 feet per specimen label) elevation in the Cuyamaca Mountains on 21 May 1893. But, except for Claude G. Edwards' report of one singing bird at 260 m elevation in Marron Valley in 1991, no summer or nesting records followed until 2001, with the discovery of an ultimately unsuccessful nest in Montezuma Valley near Ranchita in northeastern San Diego County and two fledglings in McCain Valley in southeastern San Diego County (Unitt 2004). The Pines Fire of 2002 burned most of the stand of sagebrush (*Artemisia tridentata*) in Montezuma Valley where the birds had nested in 2001. But subsequent surveys to study the effects of the Pines Fire revealed that Brewer's Sparrows continued to occur in small numbers in spring between Ranchita and Peña Spring, more consistently in unburned than in burned areas, and also sporadically (most frequently after the wet winter of 2004–05) in burned chaparral elsewhere along the upper east slope of the Peninsular Ranges. As in 2001, most birds apparently departed the area before nesting successfully. But on 4 June 2003, at elevation 1220 m near Jim Spring about 4 km east of Ranchita, along an unburned route covered for comparison with the burned study routes, Philip K. Nelson saw a fledgling Brewer's Sparrow begging from its parents. In burned chaparral on the west flank of the Cuyamaca Mountains along Boulder Creek Road, I had one on 27 June 2005 and two together on 19 April 2007. Along the five routes in the burned forest of the Cuyamaca Mountains our only sighting of a Brewer's Sparrow was of one near Azalea Spring, about 3 km north of the hybrid, on 15 June 2007 by T. A. Blackman.

Thus it appears that a few Brewer's Sparrows were attracted into the burned zone, where they encountered a superabundance of Black-chinned Sparrows. Under these conditions a Brewer's Sparrow was unlikely to encounter its own species but was never far from the territory of a Black-chinned. When one species is rare in an area where a closely related species is common the situation may to lead to hybridization, as in the case of a Great-tailed Grackle (*Quiscalus mexicanus*) × Red-winged Blackbird (*Agelaius phoeniceus*) collected in Arizona (in 1928, before the grackle was common in the area; Selander and Dickerman 1963), repeated hybridization between the Lazuli and Indigo (*Passerina cyanea*) Buntings in California

(Rowe and Cooper 1997, Unitt 2004), and the Yellow-crowned Night Heron (*Nyctanassa violacea*) nesting with Black-crowned Night Herons (*Nycticorax nycticorax*) and fledging two hybrid young at North Island Naval Air Station, San Diego County, in 2007 (M. F. Platter-Rieger, T. Shepherd, T. Burr, T. Conkle unpubl. data).

Fire is a regular feature of the southern California environment, with many species in diverse groups of organisms, including birds, adapted to exploit burned areas. But fires on the scale of those of 2002–03 may lie outside variation expected apart from human influence. In the Cuyamaca Mountains the high density of trees and the prevalence of fire-intolerant trees such as the Incense Cedar and White Fir was a result of decades of fire suppression (Krofta 1995); most of the forest had not burned since before 1910. Before the era of fire suppression, fires in southern California were likely small in comparison to those of 2002–03 (Minnich 1983), so that sudden habitat change covering over 1000 km^2 was probably not something to which the area's birds were adapted. Although the fires of 2002 and 2003 spread rapidly and burned intensely because the vegetation was so dry following years of drought, especially severe in 2001–02, all were started by people.

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NOTES

ADDITIONAL NOTES ON LEUCISTIC EARED GREBES AT MONO LAKE

JOSEPH R. JEHL, JR., Smithsonian Ornithology, U. S. National Museum of Natural History, Washington, DC 20560; grebe5k@cs.com

Blumin's (2007) photograph essay on a leucistic grebe correctly identified it as an Eared Grebe (*Podiceps nigricollis*), which, incidentally, is an adult (red eye) and probably a male, judging by the apparent length of the bill (Jehl et al. 1998). Yet, 15 of 21 experts, perhaps relying on excessive caution regarding overlap in bill shape (Kaufman 1992), considered it to be a Horned Grebe (*P. auritus*). Actually, the bill shapes of the two species are quite different. In the Horned Grebe the culmen is strongly decurved for perhaps 25% or more of its length, whereas in the Eared it is essentially straight, slightly recurved, or occasionally very slightly downturned at the very tip. One of Blumin's photos (figure 5) appears to shows an Eared Grebe with a slightly decurved bill; the degree of curvature, if any, is not clear because the head is not shown in full profile.

Blumin concluded that the leucistic bird was an Eared Grebe because it lacked a light tip to the bill, which he considered an "unequivocal" feature of the Horned Grebe. Kaufman (1992:1188) rejected that criterion, noting that in winter "both species have fairly pale gray bills." There is, however, one distinction that has long been overlooked by birders. All grebes have a patch of bare skin between the base of the bill and the anterior corner of the eye. In the Horned Grebe it is 2–3 mm wide and extends upward at a 50–60° angle (Figure 1 top; see also illustration by L. A. Fuertes in Coues 1872:1073). At close range it can be seen in the field, but it is not easy to detect in specimens because of shrinkage, and many illustrators have failed to notice it. In the Eared Grebe it is barely a pencil line wide. In normally plumaged birds it is inconspicuous because the skin and feathers are dark, whereas in leucistic birds the patch contrasts with the white plumage, making it easier to see (Figure 1 middle and bottom).

The bare area is evidently a vestige of the much larger bare patch in chicks, in which it changes in color and intensity, signaling degrees of hunger (Fjeldså 2004). I know of no discussion of its function in adults. Because its color in Horned Grebes is said to vary ["bluish gray" (Audubon in Baird et al. 1884); "flesh-colored" (Palmer 1962:72); "dusky pink" (Cramp and Simmons 1977)] it may have some function in breeding displays.

At Mono Lake leucistic Eared Grebes are scarce but regular among the fall population, which recent studies put at approximately 1.5 million (e.g., Jehl et al. 1999, 2002). During all-lake censuses in the 1980s and 1990s, I often saw 10–15 in a day (maximum 24), and over the years have banded about a dozen, once catching two in successive attempts (Figure 2). Since Mono Lake holds about half of the North American population of Eared Grebes in autumn, we can estimate the frequency of leucism in its various degrees (illustrated in Jehl 1985) in the species as 1:100,000–150,000.

There is a general expectation that highly conspicuous individuals should be rapidly eliminated from the population—and white grebes are not only conspicuous on the surface but also under water, which makes them more detectable than normally plumaged grebes to banders and natural predators such as mink and large fish. Some do survive into adulthood. I have seen one nesting in Oregon, and all captured at Mono Lake for which I have detailed records at hand were in their second calendar year or later, as indicated by a red iris. In normal juveniles the iris is light brown, turning to pale orange by October. White juveniles surely occur but may have been overlooked.

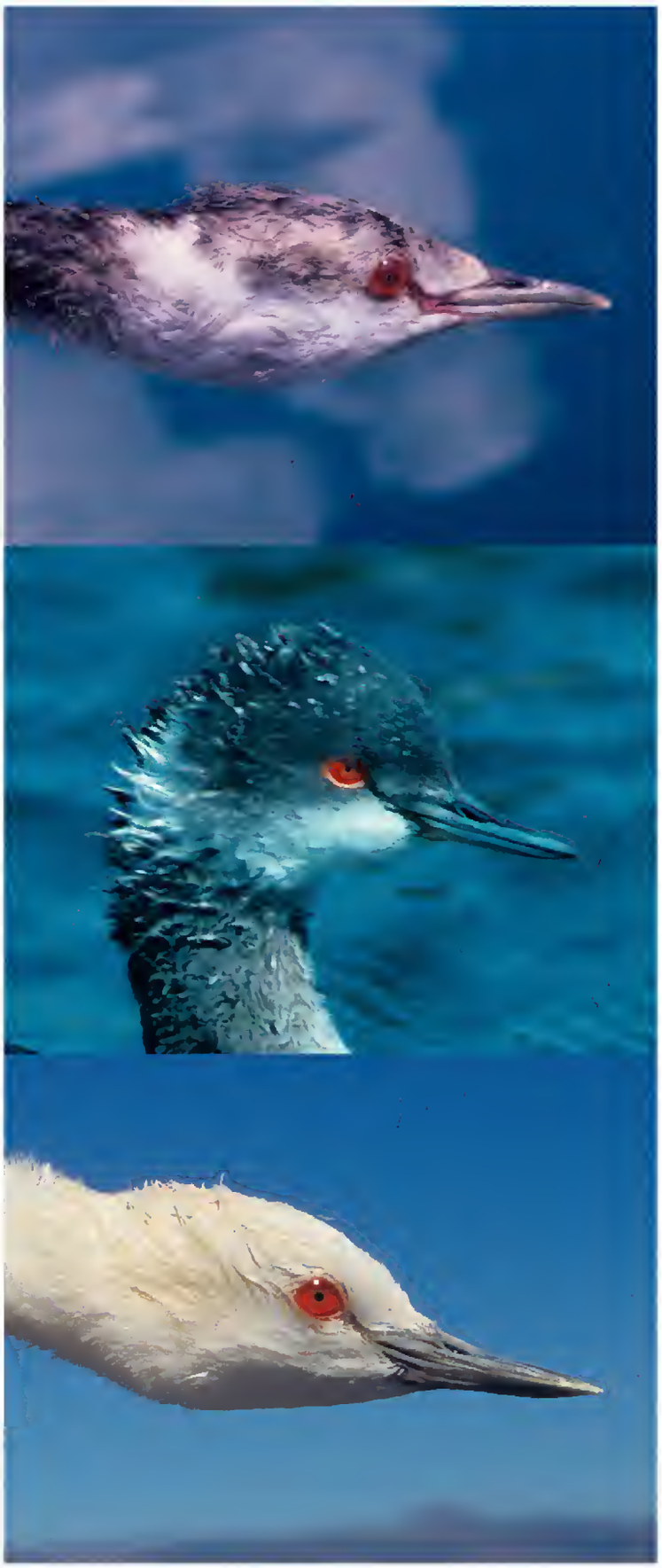

Figure 1. Top: Horned Grebe, Wyoming, September. Middle: typical Eared Grebe, Salton Sea, March. Bottom: leucistic Eared Grebe, Mono Lake, August.

Photos by Joseph R. Jehl, Jr.

Figure 2. Jon Francine and two leucistic Eared Grebes. Mono Lake, September 1995.

Photo by Joseph R. Jehl, Jr.

Also, young birds are less likely to be caught because they arrive later than adults, and catching conditions deteriorate as fall progresses.

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CARCASS SCAVENGING BY A BLACK-NECKED STILT AT THE SALTON SEA, CALIFORNIA

THOMAS W. ANDERSON, U. S. Geological Survey Salton Sea Science Office, 78-401 Hwy. 111, Ste. R, La Quinta, California 92253; tanderson@usgs.gov

The Black-necked Stilt (*Himantopus mexicanus*) is common at the Salton Sea year round with its abundance peaking annually during fall (Shuford et al. 2004). Several thousand stilts winter at the sea, with many remaining to nest in the variety of habitats surrounding the perimeter of this hypersaline lake (Patten et al. 2003). It is in highly productive habitats such as those found at the Salton Sea that they find their preferred invertebrate prey (Robinson et al. 1999).

On 24 January 2007, while conducting a survey of birds at a set of experimental saline ponds adjacent to the southeastern shore of the Salton Sea, I observed a female Black-necked Stilt scavenging the remains of a Ruddy Duck (*Oxyura jamaicensis*). The carcass appeared to be one to two days old. Organ tissue was still intact within the body cavity, but the breast muscle had been stripped away. Details of the event are as follows.

At 1315 hr, using a 20–60× spotting scope, I observed the stilt as it foraged at the shoreline for water boatmen (Corixidae) in one of the experimental ponds. The stilt stopped 30 meters from my location as it encountered the partially submerged duck carcass and initially appeared to be searching for invertebrates. After a few probes around the carcass, her bill emerged from the water holding a large chunk of tissue measuring approximately 2.5 cm × 2.5 cm × 0.5 cm. She manipulated the piece of tissue with her bill by repeatedly dropping and retrieving it. She continued this manipulation for about a minute until the scrap was abandoned. She probed the carcass a few more times before grasping another piece of tissue and violently jerked her head up and to the right (Figure 1A). This piece did not come loose immediately, and another attempt, in similar fashion, was necessary before the flesh was torn free (Figure 1B). It was a smaller piece than the first (approximately 0.5 cm × 1.5 cm × 0.5 cm) and was handled in the same way, except this time it was eventually consumed. She then removed and ate another portion before flying out of view. The entire foraging bout lasted about 3 minutes; I captured it with a digital camera by using the spotting scope as a telephoto lens.

Reduced availability of invertebrates likely contributed to this stilt's shifting to scavenging, as Nettleship (2000) also suggested for scavenging by the Ruddy Turnstone (*Arenaria interpres*). Although no quantitative information regarding the density of aquatic invertebrates at the site at this time is available, the region had just experienced weather cooler than normal. This cold spell may have further reduced prey availability already depressed during the winter months. Visual inspection of the water that day revealed that water boatmen were sparse, and during my observations I noticed a low number of prey encounters as the stilt foraged. In his extensive study of recurvirostrid behavior, Hamilton (1975) discussed no scavenging behavior associated with the Black-necked Stilt, though his studies were conducted in an environment rich in invertebrates. If scavenging is indeed limited only to times of low food resources it may not have been observed by Hamilton.

Facultative scavenging, like that I observed, is generally more common than reported in the literature (DeVault et al. 2003), although this is the first case documented for the Black-necked Stilt. This opportunistic foraging is significant from an adaptive viewpoint and has been reported among diverse species. Other "nonscavenging" birds such as the Pileated Woodpecker (*Dryocopus pileatus*, Servín et al. 2001), Ring-necked Pheasant (*Phasianus colchicus*, Knox and Buckland 1983), Great Tit (*Parus major*, Selva et al. 2005), and even a Red Phalarope (*Phalaropus fulicaria*,

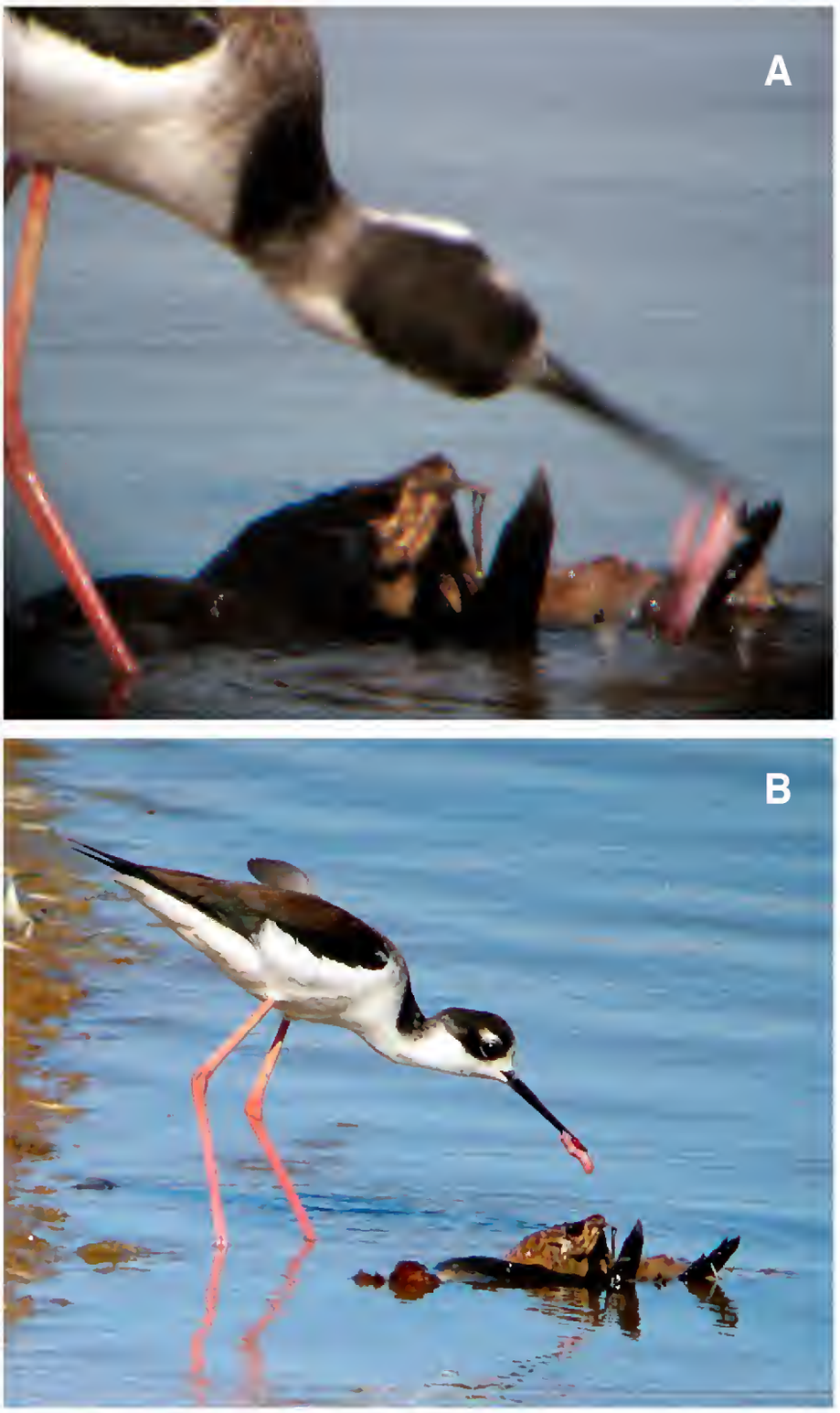

Figure 1. Black-necked Stilt removing (A) and manipulating (B) tissue from a carcass of a Ruddy Duck, Salton Sea, California, 24 January 2007.

Photos by Thomas W. Anderson

Wander 1981) have also been observed scavenging carrion. Like the bills of these other species, that of of the stilt is not ideally suited for this type of foraging. However, even with a bill so evolved for precision pecking and snatching of invertebrate prey the stilt retains the capability to exploit uncommon resources, especially when more typical prey may be less abundant.

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CALIFORNIA BROWN PELICAN NESTING ON ISLA ALCATRAZ, SONORA, MEXICO

JUAN PABLO GALVÁN, 3411 Rutgers St., Hyattsville, Maryland 20783; jpgalvan9@gmail.com

Numbers of the California Brown Pelican (*Pelecanus occidentalis californicus*) off southern California declined precipitously during the 1960s (Schreiber and Delong 1969, Gress and Anderson 1983). With the decline in dichlorodiphenyldichloroethane (DDT) in the marine food chain along with efforts to preserve key habitat, Brown Pelican populations in southern California have increased (Shields 2002). Although patterns of attendance at each colony vary greatly from year to year, breeding populations farther south along the west coast of Baja California and in the Gulf of California have remained fairly stable (Everett and Anderson 1991, D. W. Anderson pers. comm.). In 2004 Brown Pelicans formed a small nesting colony on Isla Alcatraz, a small island located 1.4 km off the coastal town of Bahía de Kino Viejo in Sonora, México (28° 49′ N, 111° 55′ W). I monitored this colony throughout the 2006 breeding season to determine if it had expanded or declined in comparison to previous estimates of numbers of active nests. I also tried to determine the fledgling success of the colony by monitoring 40 focal nests from early in the season in January to when nests were abandoned in May. Given its small size, short distance from a major human settlement, and high biodiversity, Isla Alcatraz should be considered an important site for research and conservation.

Most previous research on Isla Alcatraz has been undertaken by Prescott College A.C. (PC), a biological field station in the nearby town of Kino Nuevo. The island has an area of 1.44 km^2 and comprises four basic habitats: sandy beach, rocky beach, salt flats, and rocky cliffs. Halophytic vegetation, mostly Iodine Bush (*Allenrolfea occidentalis*) and Desert Wolfberry (*Lycium* spp.), grows on the salt flats, while Cardón cacti (*Pachycereus pringlei*) can be found in the flats and at higher elevations (PC unpubl. data). A large colony of Double-crested Cormorants (*Phalacrocorax auritus*) nests on the island from September to March/April, representing an estimated 28–43% of this species' population in the Gulf of California and 5–8% of the population on the entire Pacific coast (Pfister et al. 2005). Eight species of wading birds and the Yellow-footed Gull (*Larus livens*), endemic to the Gulf of California, also nest on the island. While Brown Pelicans have always used Isla Alcatraz as a roosting site, no nesting was recorded there until 2004, when 115 nests were active (PC unpubl. data). No data on reproductive success are available for 2004 or 2005.

The colony was active from December 2005 through May 2006 and was located on the lower elevations of the rocky cliff zone and on a small part of the salt flats closest to the base of the cliffs. Nests were constructed of sticks and branches and placed either on the ground or in a shrub.

I counted all active nests, and recorded activity at 38 focal nests, once a week or once every two weeks from January through May 2006. So as not to disturb the birds, I maintained a distance of 70 m from the colony, surveying it through 8.5 × 44 binoculars mounted on a tripod. I defined active nests as nests with chicks or adults sitting or crouching in them. A basic nest structure had to be visible for a crouching or sitting pelican to be counted as a nest, as many individuals simply sat or crouched in bushes. I identified and reidentified focal nests by using digital photographs of the colony to locate individual nests. I considered a nest to be successful if I saw chicks in the nest at least once and on the visit prior to nest abandonment the chicks were large and covered fully with white down or white down and emerging feathers. I considered a nest to be a failure if no chicks were ever seen in the nest or if on the visit prior to nest abandonment chicks were too small to have survived without parents.

I made 11 counts of the colony from January to May 2006. On my first visit on 31 January 129 nests were active. The number of active nests reached its maximum of 317 on 21 and 29 March. Numbers of active nests between February 22 and April 9 were similar, indicating that the colony increased rapidly from December to February with the arrival of breeding pairs, stabilized when most pairs had nests and were incubating eggs or rearing chicks, then decreased rapidly from late April through late May as chicks fledged and nests were abandoned (Figure 1). Of the 38 focal nests I tracked, 18 (47%) fledged two chicks, 8 (21%) fledged three chicks, 2 (5%) fledged one chick, and 10 (27%) failed to fledge any chicks. This yields an average of 1.63 young per nesting attempt and 2.28 young per successful nesting attempt.

Thus the Brown Pelican colony on Isla Alcatraz increased from 2004 to 2006 by a factor of 2.75. The colony has grown not only in terms of breeding pairs but in area occupied. In 2004 pelicans were nesting only on the eastern and southern sides of the interior low-elevation cliff zone (PC unpubl. data). In 2006, 25–30% of the nests were placed on the eastern and northern sides of the interior cliff saddle among a large stand of Cardones.

Focal nests consisted of nearly 25% of the Brown Pelican colony on Alcatraz when I first selected them on 8 February and about 12.5% of the colony when I recorded the highest numbers of active nests in late March. If it is assumed that 317 pairs of Brown Pelicans nested on Alcatraz this season, and that the reproductive success of the focal nests can be extrapolated to the entire colony, the colony's reproductive output in 2006 was 400–500 fledglings.

Continued monitoring on Alcatraz is needed to follow changes in the size and density of the Brown Pelican colony. It would be interesting to determine if individuals hatched on Alcatraz return to the island to breed or disperse to other locations, although this would entail banding. It would also be interesting to determine egg-to-chick hatching success to clarify where in the nesting cycle young suffer the highest mortal-

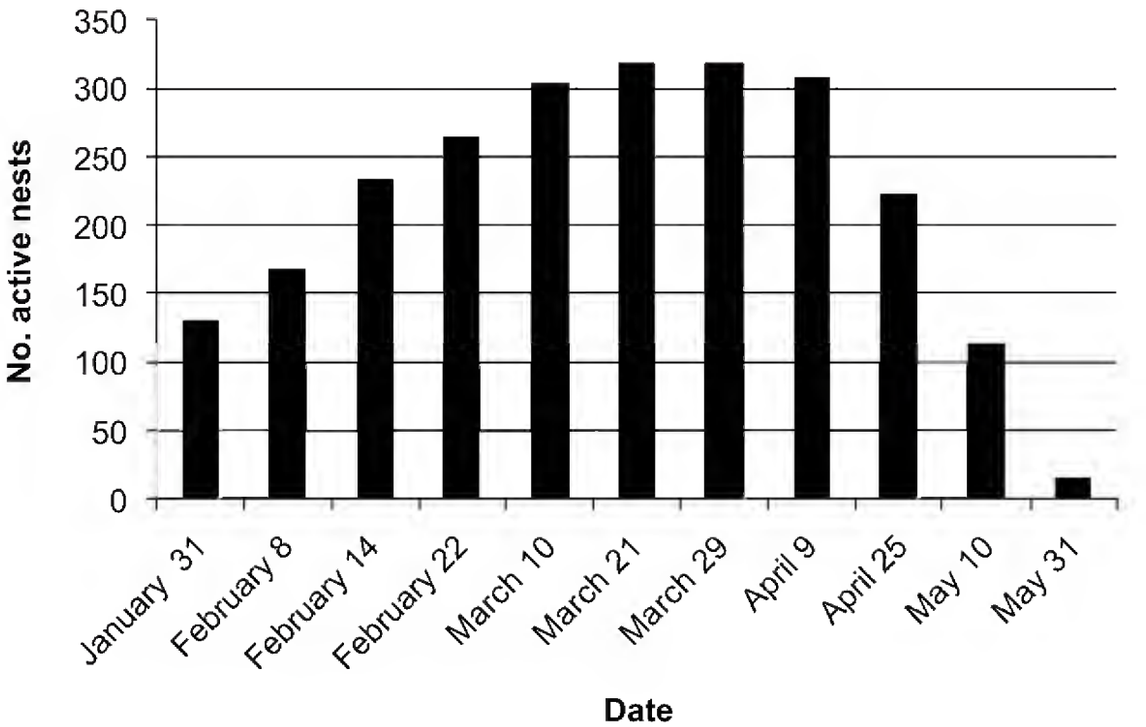

Figure 1. Numbers of active Brown Pelican nests counted from January to May 2006 on Isla Alcatraz, Sonora, México.

ity. Future research on Isla Alcatraz can provide valuable insights into the ecology of this small yet important island and the ecology of the Gulf of California as a whole.

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COMMENSAL FEEDING OF GREAT EGRETS WITH BLACK-TAILED DEER

GARTH HERRING and HEIDI K. HERRING, Department of Biological Sciences, Florida Atlantic University, 777 Glades Road, Boca Raton, Florida 33431-0991; gherrin1@fau.edu

Commensal foraging associations are defined as those in which one species aids the foraging of another while incurring no significant costs and receiving no benefits (Wiens 1989). A common commensal association comprises a "beater" species unintentionally flushing and thus making prey available for an "attendant" species (Wiens 1989). Commensal foraging is relatively common among birds, with most such associations between two or more species of birds (see Baker 1980, Robbins 1981, Hino 1998). Foraging associations between birds and mammals are somewhat less common but have been observed with Nine-banded Armadillos (*Dasypus novemcinctus*; Komar and Hanks 2002), West Indian Manatees (*Trichechus*; Scott and Powell 1982), Maned Wolves (*Chrysocyon brachyurus*; Silveira et al. 1997), human beings (Skutch 1969), other primates (Stott 1947, Boinski and Scott 1988, Ruggiero and Eves 1998), and, most frequently, ungulates (Heatwole 1965, Dinsmore 1973, Grubb 1976, Dean and MacDonald 1981, Burger and Gochfield 1982, Källander 1993, Ruggiero and Eves 1998).

Commensal foraging has been observed in several species of wading birds (see Kushlan 1978, Bennett and Smithson 2001). Kushlan (1978) reported that Great Egrets (*Ardea alba*) attend cattle, citing Rice (1954) and Caldwell (1956). Contrary to Kushlan's (1978) citation, however, Rice (1954) did not observe Great Egrets foraging with cattle. Caldwell (1956) did observe one Great Egret foraging adjacent to cattle but claimed that the egret was attracted to the pasture by a large number of Snowy Egrets (*Egretta thula*) and that it would not have foraged by the cattle in the absence of the Snowy Egrets.

Additional commensal foraging associations between Great Egrets and mammals have been reported from Africa (Dean and MacDonald 1981), where Ruggiero and Eves (1998) observed them accompanying Gorillas (*Gorilla gorilla*), African Elephants (*Loxodonta africana*), and Cape Buffaloes (*Syncerus caffer*), which flushed prey, but to our knowledge there is no published reference to this behavior in North America (see McCrimmon et al. 2001, Kushlan and Hancock 2005).

Here we report the first documented instances of Great Egrets evidently foraging commensally with Black-tailed or Mule Deer (*Odocoileus hemionus*). Two egrets were in one herd, one in the other. We observed this behavior at Bodega Bay, Sonoma County, California (38° 18′ N, 123° 03′ W), on Bodega Head, a rocky headland that forms the entrance to Bodega Harbor, in a mix of annual coastal grasslands and northern coastal scrub (Davison and Barbour 1977). On 24 November 2006, between 14:00 and 15:30 hr PST, we saw two separate herds of deer (of 8 and 14 individuals), approximately 150 m apart. Five Great Egrets were foraging alone, using "stand and wait" and "walk slowly" behaviors (Kushlan 1976, Kelly et al. 2003), on the same slope, the closest egret being approximately 50 m away from the deer at the beginning of the observation. All egrets were a minimum of 10 m away from each other during this period. After 10 min of observation, an egret flew in and landed near the center of the herd of 14 deer and began to "walk slowly," foraging among them while the deer foraged. Five minutes later, another egret flew in and landed centrally in the herd of 8 deer and also began to "walk slowly," foraging within the herd. For the next 30 min both egrets foraged with the deer, moving at their same pace across the grassy slope. Each egret remained 1–2 m behind a particular deer throughout the observation period, closely following the mammal's foraging path

while continually searching for prey behind the deer. Later (45 min), a second egret flew in and joined the herd of 14 deer. This egret foraged in the same manner as the others, staying at least 5 m from the other egrets and 1–2 m from a particular deer. During this observation both deer/egret groups covered a distance of approximately 75 m. While all egrets followed an individual deer during this observation, they were also in front of deer within the same herd.

On numerous occasions we observed both the egrets making foraging strikes and behaving as if they had made a successful catch (e.g., pausing from active foraging apparently to swallow prey). We did not identify the prey obtained nor did we quantify the success rate, either of individuals feeding on their own or of those in the deer herd. Therefore we could not confirm any benefits for the Great Egrets of foraging commensally with the deer. Neither did we measure prey abundances at foraging sites.

The Great Egrets we observed exemplified the species' behavioral plasticity, foraging either individually or commensally with deer in an upland habitat. Maccarone and Brzorad (2002) showed that the Great Egret's foraging strategies are more flexible than previously thought, the birds being successful in both still and moving waters and in habitats influenced by tides and rainfall. While much is understood about the species' foraging behavior in aquatic habitats (see McCrimmon et al. 2001), there is little information about its repertoire in upland habitats.

Commensal feeding by Great Egrets might increase their foraging success (Kushlan 1978). The Cattle Egret (*Bubulcus ibis*) captures more prey and expends less energy while foraging with grazing mammals than without (Heatwole 1965, Dinsmore 1973, Grubb 1976, Burger and Gochfield 1982). Cattle Egrets are adapted to foraging on land, however, while Great Egrets forage primarily in water. In this instance, the movements and grazing of the deer herds might well have flushed terrestrial prey located within the vegetation. But we do not know if this association actually benefited the Great Egrets or simply offered an alternative foraging strategy.

Birds may forage alone, to avoid competition, or with conspecifics, to benefit from the actions of the other birds (Crook 1964, Krebs and Davies 1997). Great Egrets that forage as individuals within a deer herd may avoid conspecific competition yet gain the advantage of commensal disturbance, as the deer flush prey ahead of them or expose prey in disturbed vegetation behind them. Alternatively, the egrets may have been foraging with the deer as an anti-predator tactic, gaining the benefit of sentinel individuals. However, the only local likely mammalian predators of Great Egrets, the Coyote (*Canis latrans*) and Mountain Lion (*Felis concolor*), are uncommon to rare in this area (www-bml.ucdavis.edu/bmr/Mammal_List.PDF) and likely present little threat to egrets.

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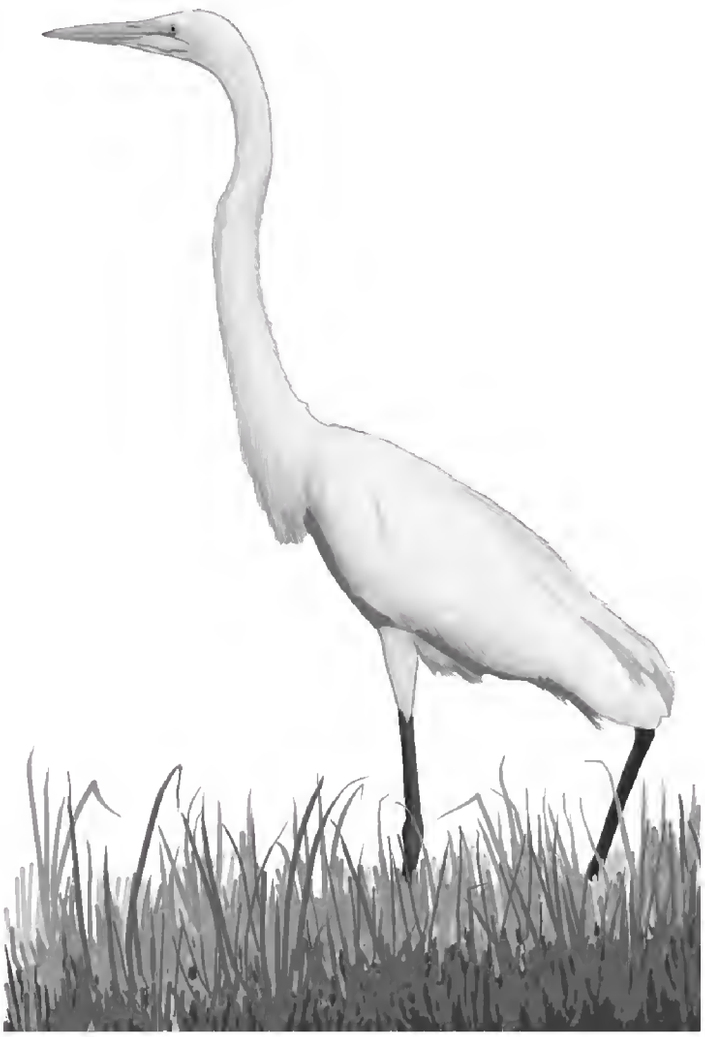

Great Egret

Sketch by George C. West

BOOK REVIEW

The Singing Life of Birds, by Donald Kroodsma. 2007. Houghton Mifflin, New York. 482 pages, numerous black-and-white figures, accompanying CD. Paperback, $16.95. ISBN-13: 978-0-618-84076-2.

"Somewhere, always, the sun is rising, and somewhere, always, the birds are singing." So begins the preface to this remarkable book, subtitled "The Art and Science of Listening to Bird Song." Kroodsma's ears and mind were opened to the world of bird sound over 30 years ago, when he started listening to and studying a Bewick's Wren in his back yard. And so began a lifetime of inquiry, of discovery, and of wonder, much of which is conveyed in *The Singing Life of Birds*, originally published in 2005 as a hardback. This very reasonably priced paperback makes the singing planet even more accessible.

It is a pleasure to read a book that is well-written about a fascinating subject, written by someone who knows his subject and can convey his passion in an infectious manner. *The Singing Life of Birds* celebrates the diversity of bird vocalizations through the mind of a brilliant scientist, yet one who writes with a nondogmatic, philosophical, and sometimes poetic perspective. For example, on page 22, as Kroodsma observes that "the ways to knowing are as diverse as the emerging colors on the glowing West Temple and Towers across the valley as I cycle up out of Zion Canyon."

The book starts with a very personal chapter entitled "Beginnings," which tells how Kroodsma became hooked on bird sound and reveals the magic and paradoxical simplicity and complexity of the subject. His subjects in this first chapter are the humble Bewick's Wren and American Robin. The former taught Kroodsma to listen, and the latter refreshes his memory annually. His tales of these two species relate with elegant simplicity the ways any of us can become a scientist—by observing (with our ears), by making field notes, and then by asking questions. The book's heart is five chapters on how songs develop, on dialects, on the extremes of male song, on dawn singing, and on female song. Appendices discuss songs and sounds on the accompanying CD and provide tips on recording bird sound. The book ends with helpful notes that reference subjects mentioned in the chapters, a solid bibliography, and an index.

The Singing Life of Birds is strongly illustrated with sonograms ("sound pictures"), for which we are given a friendly primer in the first chapter. These sonograms often correspond to songs on the CD so that one can see what one is hearing, what one is listening to—an invaluable tool for learning. When one learns to listen, not just to hear, then a world of questions is more easily accessible. How do birds acquire their calls and songs? Are they innate or learned, and learned from whom? What are the functions of these sounds? Why are these sounds the way they are? And how do things work—how do brain impulses translate to the voice box? An exploration of these questions is the book's core, via the results of lifelong studies of Kroodsma and other scientists. For example, the White-crowned Sparrow is noted for its dialects and the boundaries between them. How do dialects form? Why are the boundaries so pronounced? Do the dialects promote "inbreeding" and thus could they be a means to speciation? How persistent are the boundaries over generations? I won't spoil the answers or reveal the journeys one must take in search of them—you'll have to read the book, after which I imagine you will see (and hear) the world differently.

As a reviewer, one is supposed to find things wrong with a book, and I'm sure some people will find minor things to quibble about. One thing did strike me as odd: on page 46 the songs of Spotted Towhees in Marin County are described as "simple *drink-teeeeeeeee* songs," but to my ears the towhees here don't drink. Their song along the coast here is a simple trill, lacking an introductory note. Has it always been that way? Where is the switch to interior birds with more complex songs? Does it have taxonomic significance?

To study or simply appreciate more fully the world of bird sound, to get into the minds of birds, is something that any of us can do—if we let ourselves. All we need is open ears, an open mind, a little time, and some guidance. *The Singing Life of Birds* is a guide to the singing planet from someone who hears it as a rainbow of color, whereas most of us hear it simply in black-and-white, or at best in gray tones. Don't despair—this book is like a box of colored pencils with which you can color your world of bird sound.

Steve N. G. Howell

32ND ANNUAL WFO CONFERENCE, LAS VEGAS, NEVADA: RETROSPECTIVE

From 27 to 30 September 2007, 140 attendees enjoyed WFO's unique blend of scientific paper sessions, workshops, panels, and field trips, as well as a book signing coordinated with the release of two exciting new books. The conference benefited from local coordination by Red Rock Audubon Society, making it a resounding success.

Organizational Business

Jon Feenstra, Ed Pandolfino, and Debbie Van Dooremolen were elected to fill three positions on the board of directors that opened up as a result of last year's enactment of term limits and board expansion. Elisabeth Ammon and Gjon Hazard were re-elected to second terms. Jon, Ed, and Debbie take the places of Ted Floyd, Daniel Gibson, and Mike San Miguel, who were thanked for their years of active and effective service on behalf of the organization.

Scientific Program

This year's scientific paper sessions, moderated by Debbie Van Dooremolen, featured 26 presentations by speakers from 12 states and 3 countries. Abstracts of all papers are at www.wfo-cbrc.org/WFO2007ConferenceAbstracts.pdf.

Many talks featured research on bird communities, conservation efforts, and species of interest (such as the Yellow-billed Cuckoo, Willow Flycatcher, and Clapper Rail) at natural and restored areas in the Las Vegas region, as well as elsewhere in Nevada and the Southwest. We also heard about the distribution of desert thrashers, shorebirds at shrinking reservoirs, nocturnal migration, Snowy Plovers on urban beaches, and tamarisk as bird habitat.

Several talks presented data from radio-telemetry studies, helping to illuminate the behavior of the Laysan Teal, dispersal of the American White Pelican, and pesticide contamination of the White-faced Ibis. Robert Gill delighted us with a second year of hot-off-the-satellite data from Bristle-thighed Curlews migrating across the Pacific Ocean.

A highlight was the session on genetic analysis and avian systematics by John Klicka and his students at the University of Nevada, Las Vegas. Following an introduction to the methods and approaches of molecular systematics, they revealed some surprising findings about the House Wren, Western Flycatcher, Solitary Vireo, Eastern Towhee, and western pine–oak birds in general. For many in the audience, this session helped bridge the gulf between molecular systematics and field-based ornithology.

Finally, Carol Beardmore and Philip Unitt presented a survey of endemic subspecies

FEATURED PHOTO

NOTES ON PLUMAGE MATURATION IN THE RED-TAILED TROPICBIRD

RON LEVALLEY, Mad River Biologists, 920 Samoa Blvd., Suite 210, Arcata, California 95521; ron@madriverbio.com

PETER PYLE, The Institute for Bird Populations, P. O. Box 1346, Point Reyes Station, California 94956; ppyle@birdpop.org

The Red-tailed Tropicbird (*Phaethon rubricauda*) is the most pelagic of the three species of tropicbirds. It ranges throughout the tropical Pacific and Indian oceans, nesting on islands. Young birds fledge alone, possibly with some postfledging parental care (Ainley et al. 1986), and most do not return to land for at least two years. During that time they wander, usually as single birds, well away from the sight of most observers. Most individuals return to breed at an age of 2–7 years. Although breeding at an age as young as 9 months, in a "near-adult like plumage," has been reported (Schreiber and Schreiber 1993), we question this and wonder if the bird was older than suspected when banded the year before (see below). The majority of birds return by the age of 4 years, but those that reportedly return to breeding islands at 2 years of age (presumably in second basic plumage) are in almost full adult plumage (Schreiber and Schreiber 1993), and little is known about the species' predefinitive molts and plumages. This uncertainty is compounded by year-round breeding in many populations, meaning that molts and plumages may not follow regular, season-based cycles at the population level. Individuals may undergo prebasic molts at intervals of less than one year (e.g., if a breeding attempt failed) or more than one year (e.g., if a breeding attempt was prolonged or skipped).

During March and April of 2006 LeValley was fortunate to sail from La Paz, Baja California, Mexico, to Tahiti on board the sailing vessel *Seafever*. During that cruise he encountered a number of immature Red-tailed Tropicbirds. The photographs reproduced here illustrate some of the characteristics of immature birds at various stages of plumage maturation.

Our assessment of plumage states and molt cycles follows Pyle (in press), in which information on Red-tailed Tropicbird molts and plumages was gathered through extensive specimen examination and field observations by Pyle. Red-tailed Tropicbirds appear to lack prealternate molts, with adults having only a single prebasic molt per cycle. Specimen evidence implies that a limited to partial preformative molt of some head and body feathers may occur during the bird's first year, well before commencement of the second prebasic molt, but this needs confirmation. It is possible that the Red-tailed and other tropicbirds lack any molt in their first year after fledging and thus follow the "simple basic strategy" (Howell et al. 2003).

Identification of adult tropicbirds by the pattern of their primaries, primary coverts, and secondaries is well understood (e.g., Harrison 1983). At all ages, the Red-tailed Tropicbird has essentially all white primaries and secondaries; only the shafts of the outer primaries are dark. All three species of tropicbirds begin life with a barred and spotted juvenal (= first basic) body plumage. Identification of younger tropicbirds in barred plumage, like the one featured on this issue's back cover, can be more challenging but is readily accomplished by noting the amount and position of black in the primaries and primary coverts. In comparison to the bird on the back cover, juveniles of both the Red-billed (*P. aethereus*) and White-tailed (*P. lepturus*) tropicbirds show more extensive black in the juvenal primaries. In the Red-billed Tropicbird the primary coverts are largely black as well, helping to distinguish it from the White-tailed Tropicbird, in which the juvenal primary coverts are white.

Red-tailed Tropicbirds leave the nest in juvenal plumage, which is heavily barred on

the upperparts. The bill and legs are dark grayish, almost black. A thick black mark appears in front of the eye, curving down to the base of the bill. A smaller black spot is behind the eye. The outer primaries have black shafts, the inner primaries have gray shafts, and the secondaries are essentially white. Primaries 9, 8, and 7 have black marks along the shaft near the tip (tropicbirds, like all Pelecaniformes, have 10 functional primaries), whereas in adults these feathers lack bold black shafts and marks. Tail feathers are white with black tips. The juvenal central tail feathers are only 1–4 cm longer than the other rectrices and have two black spots near the tip (Pyle in press). The underparts are almost all white with diffuse smudging on the sides and lower flanks.

The featured photo on the back cover of this issue was taken on 9 April 2006 at 13° 31.4′ N, 119° 11.0′ W, at least 600 nautical miles from the nearest possible breeding site on San Benedicto Island in the Revillagigedo Islands (breeding suspected, Howell and Webb 1990) and over 1700 nautical miles from known nesting sites in either Hawaii or the Marquesas Islands, French Polynesia.

Because the Red-tailed Tropicbird can breed year round, the age of this individual is difficult to determine, but of note is the pattern of barring on the body feathers, the combination of the paired elongated central tail feathers, and the dark bill. The aspect of this bird resembles juvenal plumage, including most of the back and scapular feathers. Note, however, that the feather barring is not as heavy as it is in juvenal plumage, especially on later-replaced feathers such as the greater coverts and uppertail coverts (on many of which it is absent altogether). This distinction suggests that the upperpart feathers and wing coverts have been replaced at least once, during either a preformative molt or the second prebasic molt (see above). In addition, close inspection reveals that primaries 7–10 are worn and juvenal and that the inner primaries (1–5) appear new and are thus of the second basic plumage. Primary 6 appears to be missing or growing as part of molt. Since tropicbirds are among the many large birds that exhibit staffelmauser (a strategy in which one wave of molt in the primaries and secondaries begins before the preceding has been completed) this bird may not complete the current prebasic wave of molt before starting its next prebasic molt (Pyle 2006). The elongated central tail feathers (which have a distinct pinkish cast) are also of the second basic plumage and in combination with the dark bill suggest the bird is approximately one year old. The two central rectrices are approximately the same length, indicating that they may be growing simultaneously, unlike the adult's elongated central tail feathers, which are molted alternately (Viet and Jones 2004).

The first Red-tailed Tropicbird that LeValley saw on the trip, portrayed in Figure 1, was also an immature. It is instructive because its bill was beginning to turn yellow, the black barring on the upperparts was less prominent, and the elongated tail feathers appeared white (likely as a result of bleaching) and of equal length. This bird also has retained the juvenal outer primaries, showing the dark tips on p7–p9. No primary molt is evident. This bird may be the same age as the bird featured on the back cover, perhaps with primary molt suspended between the newer looking p1–p6 and older-looking p7–p10, and perhaps indicating variation in the extent of barring of the second basic plumage. If the rare Red-tailed Tropicbird actually does attempt to breed at 9 months of age (see above), some brightening of the bill and loss of barred plumage could be correlated with hormonal changes related to breeding. In any case there is likely much individual variation in bill color and extent of barring at this age.

Between the first sighting and the sighting of the bird on the back cover LeValley encountered a single bird that appeared to be beginning a second round of primary molt. Shown in Figure 2, this bird had elongated tail feathers, white tips to the primaries, and a clear yellow-orange bill. Close inspection of the primaries shows that p9 and p10 are likely worn with faint vestiges of the dark shafts of juvenal primaries. This bird also appears to be missing p1 and p2, indicating the beginning of a second round of primary molt. The central tail feather (only one is evident) appears to be of either the second or third basic plumage, as would be expected in a bird that had progressed this far in primary molt. This bird could be in the vicinity of 18 to 24 months of age.

Figure 1. Immature Red-tailed Tropicbird over the tropical Pacific Ocean, 9 April 2006. Note the dark tips to p9, p8, and p7 and mostly yellow bill.

Photo by Ron LeValley

Figure 2. Red-tailed Tropicbird in late second basic plumage over the tropical Pacific Ocean 9 April 2006. Note the worn and faded p9 and p10.

Photo by Ron LeValley

Figure 3. Red-tailed Tropicbird in second basic plumage over the tropical Pacific Ocean 14 April 2006. Note lack of dark tips to primaries and growing p10.

Photo by Ron LeValley

On 14 April, at 10° 47.5′ N, 123° 36.5′ W, LeValley encountered a Red-tailed Tropicbird that had progressed further with its molt, plumage, and bill color, although (because of individual variation in maturation rates) it may not have been older than the bird in Figure 2. It showed distinct barring on at least the nape (Figure 3), a mostly (but not entirely) clear orange bill, and paired elongated central tail feathers. All of the primaries were pure white, and p10 seems to be still growing. Close inspection of the original photo revealed only the slightest hint of pink in the tail streamers. Like the bird in Figure 2, this bird appears to be in transition between the second and third basic plumages and probably is approaching two years of age.

Finally, Figure 4 shows an adult in full breeding plumage at Midway, Hawaii, photographed on 15 February 2001. Note the lack of barring on the body plumage, entirely white p7–p9, long (and red) streamers, and evenly colored (red) bill. This bird is at least in its third plumage cycle (and year?) and more likely is in its fourth cycle or later.

These photos imply that young Red-tailed Tropicbirds retain barring through at least the second and possibly into the third basic plumage, although the barring becomes thinner and less extensive with age. The first elongated tail streamers show some hint of reddish, but through time they can be bleached by the sun and appear almost totally white in the field. Juvenal primaries 9, 8, and 7 have black marks along the shaft at the tips, and this pattern is useful for distinguishing first-cycle birds from those in later plumages; however, beware that the black tips on p9 can wear away before the feathers are molted. The outer primaries appear to be retained until the third prebasic molt, as is typical of species following staffelmauser (Pyle 2006).

In addition, the younger plumages seem to have elongated central tail feathers of equal lengths. Viet and Jones (2004) have described a unique molt sequence in which the adults molt the elongated tail feathers alternately, at about 6-month intervals, but

Figure 4. Breeding adult Red-tailed Tropicbird at Midway Island, Hawaii, 15 February 2001.

Photo by Ron LeValley

coinciding with their both being at full length for courting (cf. Figure 4). It appears that this alternation may begin with the second round of replacements (for the third basic plumage), as in second basic plumage the feathers appear to be equal in length.

Thanks to Joe Morlan for suggesting this discussion, to Steve Howell for valuable comments on the photographs, and to LeValley's traveling mates on the *Seafever*, Rob Gomersal, Wendy Catlin, and Eric Nelson. This is contribution number 328 of the Institute for Bird Populations.

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PRESIDENT'S MESSAGE

Lately, I've been thinking quite a bit about just what defines WFO is as an organization. To do this, I need to start with our base, the many diverse individuals who collectively constitute our membership. What is the membership base, what are their interests and experience level, where do they fall in the continuum between birdwatcher and hard-core science, and where do they call home? What are our strengths and weaknesses as an organization? Where are we going? From discussions with the membership, and looking into other resources, some interesting facts emerge that I would like to share with you.

Membership. WFO is composed of a continuum of interests and skills, from casual birders to starving field technicians to kamikaze listers to research scientists. We have a wide diversity within the membership, including diversity by age, sex, and geographic locality. We have members in 46 states and provinces in the U.S., Canada, and Mexico. California continues to lead in overall membership, but that is to be expected because of the institutional ties with WFO's founding group, California Field Ornithologists. If we look at the per capita membership per million people for each western state (thanks to Robbie Fischer, Kimball Garrett and Jay Withgott for these numbers), Alaska leads with 19.8, followed by California (15.2), New Mexico (10.5), Oregon (8.1), Washington (5.6), Nevada (5.1), Idaho and Colorado (5.0), Arizona (2.4), Hawaii (2.3), Montana (2.2), Utah (2.1), and Wyoming (2.0), Canada is at 0.8, Mexico at 0.01. These numbers identify disproportionate geographic coverage in our membership. For an organization whose goal is to represent all western states, I would like to see levels of membership of all western states similar to that in California. In addition, while it appears on the surface that we are doing well, our membership has declined (we have had a membership as high as 1100+ but are currently under 900), and the median age of our members continues to increase. Red flags? Yes, and this certainly has caught the attention of WFO's board of directors.

Publications. *Western Birds*, WFOs flagship publication, continues to set the standard for field-oriented science publications. Among its many qualities, its content fills a unique niche between what is offered in more popular publications, such as *Bird Watcher's Digest* and *Birders' World*, and that in professional scientific journals, such as the *Auk* and *Condor* (although *Western Birds* also publishes stellar scientific manuscripts). However, high-quality WFO publications do not end with *Western Birds*. As many of you know, WFO has just published the *Rare Birds of California* (September 2007). The WFO monograph series has been launched with the upcoming publication of *California Bird Species of Special Concern*, due to be published in late 2007 or early 2008. When it comes to WFO publications, we are sound and healthy.

Annual Meetings. With the 32nd annual meeting held in Las Vegas this past September, WFO continues to reach out to new members in states where our representation is not particularly strong. Our policy of scheduling the annual meeting outside of California on alternate years has been a great success, allowing our members to enjoy the birds and learn about the diversity of natural habitats throughout the West. It also has an additional benefit of attracting new members from the meeting locale and spreading the word about WFO to states outside of California. At the recent meeting in Las Vegas, we had participants from 16 states and two countries, with some members in attendance from Maryland, Georgia, and Ontario. This is another accomplishment for WFO and its membership.

Website. With our long-time webmaster Peter LaTourrette stepping down after many dedicated years of service (we all thank you, Peter!), we will continue our web presence with a new webmaster and a commitment to redesign the website to be as informative and user friendly as possible. Tim Avery has stepped up to the plate as the new webmaster. With the help of Jay Withgott and Ted Floyd, WFO aims to make

the website a one-stop shopping resource for birders and ornithologists throughout the West. This is yet another major plus for WFO.

As you can see, WFO appears to be as healthy and vibrant as at any time in our past. While this may be true, the officers and the board of directors have continued concerns about our median membership age and lack of recruitment, both from within and outside of California. We are not content with being "just good enough;" we want to excel in all facets of the organization, and I think that we are close. The one area where the membership can help WFO the most is in recruitment. I challenge every member to commit to recruiting one new member into the WFO ranks in 2008. I also challenge each professional and each academician to recruit two members from among their colleagues and students, and each board member to recruit five members from their contacts. If we were to do this, we would be a healthier and more vibrant organization, prepared for the challenges of field ornithology in the 21st century. Will you do your part?

Dave Krueper, October 2007

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Philip Unitt

Back cover "Featured Photo" by © Ron LeValley of Arcata, California: Red-tailed Tropicbird (*Phaethon rubricauda*), about 400 miles southwest of the tip of Baja California, 9 April 2006.